THE RUBBER AGE

APRIL 10, 1922 VOL. XI. NO. 1

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TABLE OF CONTENTS

Electric Drive in Rubber Mills. By E. W. Pilgrim 5
Tapping Experiments 7
Directory of Rubber Trade Associations 9
Ninth Annual Meeting and Banquet of The Waste Material Dealers Association, Inc. 11
Abstracts 12
The Polish Rubber Industry and Its Prospects for Development 13
NEWS OF THE INDUSTRY
The Industrial Rubber Situation; Report of the Goodyear Company 14
Lake Shore Rubber Company Begins Production; Rubber Association Year Book for 1922 Issued 15
Hood Rubber Company Sales for 1921 Aggregate $24,000,000 17
January Rubber Exports Show Little Change from 1921 18
F. F. (Bill) Dugan Goes with Denman-Myers 19
Grand Rapids Tire & Rubber Corp Elects; F. E. Titus, Chairman Foreign Trade Division 20
Addition to the Whitehead Plant at Trenton; Rubber Club of San Francisco Holds Dinner-Meeting 21
MARKETS
Cotton and Fabrics 22
Chemical and Compounding Materials 23
Crude Rubber; Reclaimed Rubber; Scrap Rubber 24
American Rubber Patents; Trade Marks; New Incorporations 25

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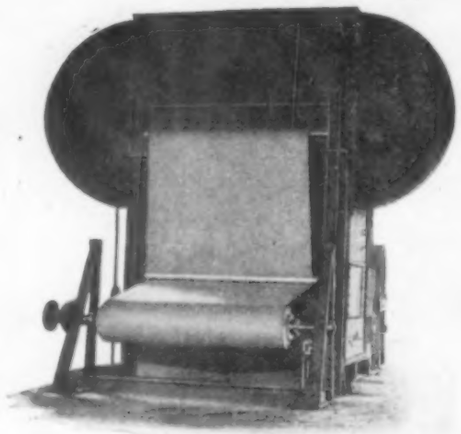

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THE RUBBER AGE

H. S. VORHIS, GENERAL MANAGER
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VOL. XI APRIL 10, 1922 No. 1

Electric Drive In Rubber Mills

A Technical Consideration of Power as Applied to All Machines Used in Rubber Factories that will Interest Executives, Superintendents and Engineers.

By E. W. Pilgrim

Power and Mining Engineering Dept., General Electric Co.

THE flexibility and adaptability of electric machine drive as applied to the various machines used in the rubber industry have proved so valuable that today rubber mills are the largest individual users of power of any industry in the country. The problem that confronts this industry today is how to operate this power at less expense without sacrificing any of the flexibility. This problem largely resolves itself into one of power factor correction, since a large majority of the machines are driven by induction motors, and under conditions that do not even allow the induction motor to be operated at its best power factor. Another feature that is tending to hasten matters is that central stations have already started or are seriously considering, the inclusion of a penalty—bonus power factor clause in their power contracts.

Three Classes of Machines

For consideration of the type of drive and control that will best meet these conditions, the machines in use in rubber mills may be divided into three classes, those used in general milling, or basic operations, those for semi-finishing processes, and those for finishing. In the first category are washers, mixers, and their contributary machines, in the second, calenders, conveyors, etc., and in the third, tire building machinery, tube machines, rubber shoe machinery, and many others for different purposes.

It is the purpose of this article to consider the engineering problems involved in applying electric power to these machines in such a way that the safest and most economical operation can be obtained without any sacrifice of flexibility.

Before this can be done it is necessary to appreciate the different characteristics of, and the work done by the different machines. First in natural order is the washing machine, in which the crude rubber as received is broken up and freed of its impurities. The machine consists of two rolls, fluted spirally in the same direction, but revolved in opposite directions, and at different speeds. The lump of crude rubber is forced into the V between these rolls, which lacerate and crush it, separating it from foreign objects, such as sticks, stones, sand, and similar impurities, which are washed out by a stream of water.

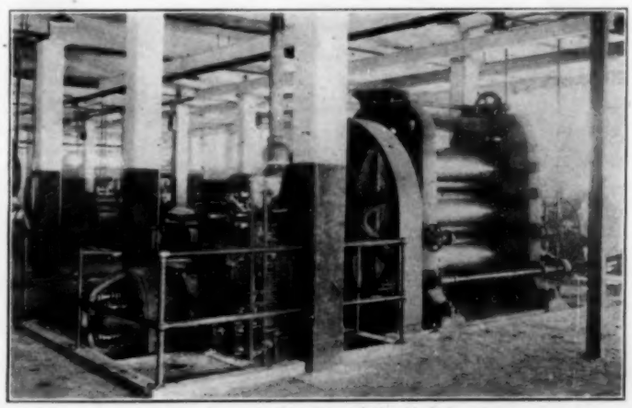
The high ratio of friction caused by the difference in peripheral speed between the rolls, and the practice of feeding in large chunks of crude rubber, cause a load on the machine the characteristics of which are sudden, high peaks of momentary duration, alternating with valley periods when the machine may be running idle. In addition to the electrical effect of such a load, the machine and motor are continually subjected to a succession of heavy mechanical shocks.

It has been the custom to divide these mills either individually or in groups driven by constant speed induction motors through a clutch and a system of gears. The result is that unless considerable care is used in the selection of the motors, and in grouping the mills on the line, the power factor of the load will be objectionably low. If the motors are selected so that the mills are overpowered, poor power factor will result because that of an induction motor decreases in proportion to the load, and an overpowered line means that the motor will always be operating too far down on the power factor curve. The same applies if the mills are not properly grouped, although it is possible, by combining a number of them to produce an average mean load on the motor that will allow of good power factor.

Two other remedies are also possible. The first, which is being resorted to more and more is the application of synchronous motors to the mill line, and the other is that of inserting in the line contributary machines such as sheeting mills, which have different load characteristics from the washers.

As to the application of synchronous motors, they tend inherently to improve the power factor and the slow constant speed types allow the elimination of costly, noisy gearing. Since the starting conditions of mill lines are not severe, when started empty, the low starting torque of the synchronous motor can not be accounted an objection to its use. As far as the maximum torque is concerned, the synchronous motor has the advantage that its maximum torque can be adjusted to meet the load conditions.

The most practicable synchronous motor for this use is an 0.8 PF constant excitation one, because a high breakout torque is required, and the breakout capacity depends on the field strength. Also, in all rubber machine drive, capacity for overload must be taken into consideration, either by selecting the motor by its nominal rated horsepower, or selecting one with sufficient overload capacity to take care of the momentary peaks. The danger in the first instance is that the mill line will be overpowered, for normal running con-



MOTOR-DRIVEN 24" x 66" CALENDER, NEW ENGLAND TIRE & RUBBER CO., HOLYOKE, MASS.

ditions. The 0.8 PF synchronous motor has an inherent overload, capacity with a rising power factor, so that at 25 per cent overload, for example, its power factor is in the neighborhood of from 0.9 to 0.95. Since there is no change in the excitation current, and but little in the armature current, there will be no overheating on overload.

Mixing Machines

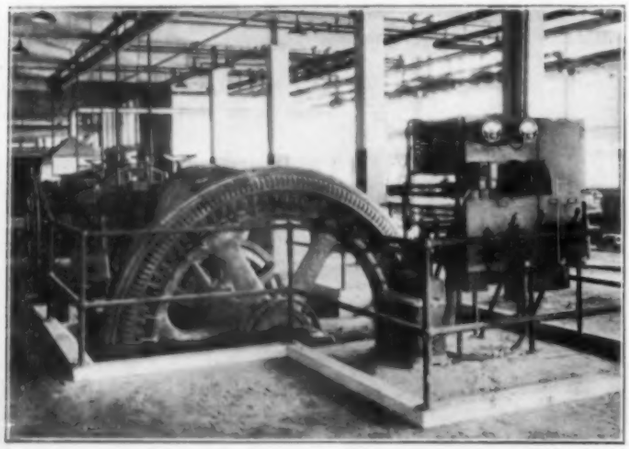
The mixing machine is the one in which the pure rubber after being washed, sheeted, etc., is mixed with the ingredients that transform it into the various compounds used in the different branches of the rubber industry. The machines consist of smooth rolls which are heated to a temperature consistent with the kind of compound to be produced. They may be driven either by an induction motor through a set of gears, or by a synchronous motor either direct connected or geared. The cold mass of rubber is thrown between the rolls and the chemicals which are used to form a rubber compound are added by degrees. The load on the mill consists of a series of high peaks gradually tapering off as the rubber compound becomes homogenous. The manner in which the rubber is fed to the rolls has a good deal to do with the duration of the peak, and the kind of composition produced also effects it.

The speed requirements call for a constant slow speed as does the washer, but the selection of the motor as to horsepower depends on the size of mill, kind of composition to be produced, the rate of feeding, and the temperature at which the rolls are maintained. If induction motors are used to drive a line of mills, it is good practice to combine mills working on different classes of compound in the same line. In this way advantage can be taken of the different peak factors to produce an average mean load that will better the power factor of the driving motor. It is also possible by means of signals to arrange the feeding of a number of mills so as to avoid excessive peaks and valleys in the load on the motor. The same difficulty as presents itself in selecting motors for washers is present in the case of mixers. If the motors are selected by nominal horsepower rating, or by consideration of the peak loads, the mills are liable to cause the same waste of power as the former case, and for the same reason.

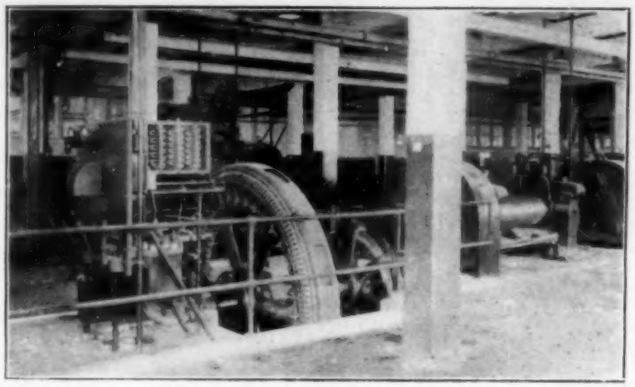
Synchronous motors have been used on these mills with the same beneficial effects as on washers. When direct connected they eliminate the expense and annoyance of gear trains, besides improving the power factor. The same operating conditions, practically prevail on these mills as on washers as far as the synchronous motor is concerned, and that they do the work satisfactorily is proved by the success of existing installations.

Control Systems

The principal features that must be considered in control systems and all basic operation machines are safety, simplicity and reliability. Provision must be made to guard operatives, because the work on these machines is extremely hazardous. The hazard arises from the fact that operators are liable to get their hands caught in the tenacious mass of plastic rubber, and be drawn into the rolls before they can free themselves. Consequently devices must be provided that will stop the machinery instantly, and so arranged that if both the man's hands are caught, he can still stop the machine.



ANOTHER VIEW OF THE 3-60" MILLS, PLANT OF THE NEW ENGLAND TIRE & RUBBER CO., HOLYOKE, MASS.



3-60" MOTOR-DRIVEN MILLS, NEW ENGLAND TIRE & RUBBER CO., HOLYOKE, MASS.

One method, that seems to be the most satisfactory, is to operate the mill through a magnetic clutch, and to have in addition a solenoid brake applied to the shaft. Consequently, when the safety device is tripped, the motor is disconnected from the line, and the solenoid de-energized, bringing the mill to a very sudden stop. Provision should be made so that any operator can stop the line, in emergencies, and so that it cannot be started up again until everything is clear. In addition the motors should have the usual overload, and under voltage protection. The former will prevent the mills being forced or fed too rapidly and the latter protects the motors from damage due to starting up under too great a load, after failure of voltage.

Calender Motors

The calender is the most important machine in a rubber plant and is usually used for one of three purposes. These are spreading the rubber composition over the surface of cloth, or skim coating, rubbing it into a fabric, or frictioning, and rolling it out into sheets or calendering. Each of these operations is performed at a different speed; the first at high speed, the second at medium, and the third at low. The speeds for any operation also change with the character of the compound being handled, and in proportion to the temperature of the rolls.

Consequently the best motor for driving calenders has been found to be a direct current, adjustable speed type. Calender speeds and sizes vary in different plants, and each requires a different size of motor. Where only 3 : 1 speed variation is required, single voltage motors are used, but where a 4 : 1 or greater variation is necessary, three wire 115/230 volt motors are usually used.

The operating requirements of calenders have resulted in the design of a motor and its control system especially built to meet them. Two principal requirements the motor must meet are successful commutation at any speed within its range, and the ability to act as a generator on what amounts to short circuit conditions imposed by dynamic braking in emergencies. The result is a motor which, instead of having the usual type of commutating poles, has a distributed compensating winding the flux of which bucks that of the winding. The commutating zone is established by the concentration of a portion of this winding on the commutating poles. The distributed winding practically eliminates the losses due to flux distortion which results in poor commutation, high voltage between adjacent commutator segments, and large load losses at weak field. As for the mechanical features, the motors have a removable shaft and split back end shield and bearing which facilitates repairs and changes.

In a rubber mill where the vast majority of the machines are driven by motors using A.C. power, special provision must be made for supplying D.C. power for the calender motors.

In case synchronous motors are employed on the mill lines, this same D.C. power source can be used to excite them, thus serving a double purpose. In the smaller plants it is usually the custom to furnish this power by a synchronous converter connected for either two or three wire operation on the D.C. side. These machines are comparatively cheap and have a high efficiency. The larger plants, which have a number of calenders, use synchronous motor generator sets which, in addition to supplying the calenders with D.C. power, also help to correct the power factor of the whole installation.

Control of Calenders

Two types of control have been designed for calender motors, the automatic and the semi-automatic. The latter is the more generally used because of its comparative simplicity. The control is designed to give a wide range of speed, to protect the motor from damage due to abuse, or other causes, and to provide the highest degree of safety for the operator. The calender is controlled by a combination of push button stations and a master controller.

The starting sequence for 115 volt operation and that for 230 volt differ in some respects, although the general principle is the same in both cases. On 115 volts the master switch is moved to the first point, energizing the line contactor, which gives threading in speed. At the second point the speed reducing contactor is closed, and the series accelerating contactors bring the motor up to basic speed. In 230 volt operation the first point on the master switch energizes the line contactor and permits the accelerating contactors to bring the motor up to basic speed without any preliminary threading in speed.

In stopping, either by bringing the master switch to the "off" position, or because of the tripping of the overload relay, the motor coasts to rest. Stopping either with or without dynamic braking can also be accomplished by push button stations located near the calender. In all cases the master switch must be put in the "off" position before the machine can be re-started.

In stopping in emergencies the coil circuit of the line contactor and that of the dynamic braking contactor are broken, causing the latter to close and bring the machine to a very quick stop. With the braking contactor closed, current flows through the dynamic braking resistor, and the coil of the full field contactor which are connected across it. Thus not only is good field insured for braking action, but the degree of braking may be adjusted by manipulating the resistance so as to increase or weaken the field. The switch which is used for emergency stops is operated by a rope which runs over the calender within easy reach or from the cross bar. The machine cannot be started after an emergency stop until the switch is reset and the master controller returned to the "off" position. If the switch should be returned to the running position during dynamic braking, the braking will continue until the master switch is returned to the "off" position.

Tapping Experiments

IN the *Bulletin* for July, 1920, p. 266, reference is made to arrangements made for an experiment to be carried out in the F.M.S. in connection with daily and alternate day tapping. The Jeram Rubber Estates, Ltd., kindly allotted a certain area on their Effingham Estates for this experiment which was conducted under the supervision of the association's scientific staff, with Mr. Sidney Morgan, A.R.C.S., as honorary technical adviser.

Three blocks were set apart, each of 24 acres and 1920 trees, the system of tapping being one cut on half the tree, one block being tapped daily, and the other two blocks alternate daily. The following particulars of the results so far obtained have been supplied through the courtesy of the Jeram Company. Herbert Wright, A.R.C.S., chairman of the company and a member of the association's research committee, states that he considers the yield per tree per annum and lb. per cooly on alternate day tapping are satisfactory, especially in view of the fact that the areas on which the experiments are being carried out had only just come to maturity, and had not been previously tapped when the experiments were commenced.

DAILY TAPPING.

	Quarter to 30th Sept., 1920.	6 months to 31st Dec., 1920.	9 months to 31st March, 1921.	12 months to 30th June, 1921.	*Latest* 2 months to Aug., 1921.
Cost per lb. to date ...	14.20 ct.	13.57 ct.	12.53 ct.	7,85 ct.	5,74 ct.
Yield per tree to date ...	1.17 lb.	2.34 lb.	3.43 lb.	4,78 lb.	1,05 lb.
Yield per acre per annum ,	375.96 lb.	374.20 lb.	366 lb.	382.24 lb.	506.04 lb.
Lb per Cooly .	4.35 lb.	4.32 lb.	4.36 lb.	4,08 lb.	6,02 lb.
Bark removed to date ...	3.04 in.	5.94 in.	8.49 in.	11,19 in.	1.83 in.
Cuts per inch	30	30	31	28	30
Crop to date	2248 lb.	4490 lb.	6605 lb.	9173 lb.	2024 lb.

Alternate Day Tapping

Cost per lb. to date ...	10.48 ct.	9.24 ct.	8.30 ct.	5,15 ct.	3,43 ct.
Yield per tree to date ...	.80 lb.	1.72 lb.	2.59 lb.	3,63 lb.	,89 lb.
Yield per acre per annum ,	257.84 lb.	276.05 lb.	276. lb.	290.49 lb.	425.88 lb.
Lb. per Cooly	5.99 lb.	6.34 lb.	6.60 lb.	6,96 lb.	10,14 lb.
Bark removed to date ...	1.70 in.	3.25 in.	4.82 in.	6,41 in.	1,08 in.
Cuts per inch	28	29	27	24	26
Crop to date	1547 lb.	3312 lb.	4994 lb.	6791 lb.	1703 lb.

The association's mycologist reports that in connection with the experiments, the following figures are of considerable interest as illustrative of the occurrence of Brown Bast in the daily tapping as compared with alternate day tapping:—

Daily Tapping

Block No.	Total trees affected per block of 4 acres (80 trees per acre)	Per cent
1	12 in 320 trees	= 3.75
5	53 " "	= 16.57
9	59 " "	= 18.44
10	60 " "	= 18.75
15	53 " "	= 16.57
18	49 " "	= 15.31
	Total 286 affected trees out of 1920	= 14.88
	Average percentage = 14.88	

Alternate Day Tapping

Block No.	Total trees affected per block of 4 acres (80 trees per acre)	Per cent
2	16 trees in 320	= 5.00
3	10 " "	= 3.25
4	17 " "	= 5.31
6	16 "	= 5.00
7	9 " "	= 2.812
8	24 " "	= 7.50
11	26 " "	= 8.125
12	20 " "	= 6.25
13	12 " "	= 3.75
14	19 " "	= 5.93
15	8 "	= 2.5
17	32 " "	= 10.00
	Total 209 affected trees out of 3840	= 5.443
	Average percentage = 5.443	

Summary

Section.	Area.	Total No. of trees in area.	Total No. of trees affected.	Average No. of affected trees per acre.
Daily	24 acres	1920	286	12
Alternate	48 acres	3840	209	4

The experiment is being continued on a quarter section instead of a half.

Spacing and Thinning

At the Sixth Annual General Meeting of the South India Branch of the Rubber Growers' Association, held at Cochin Club, on Oct. 29, 1921, Mr. Ashplant, the rubber mycologist, gave an interesting address on spacing and thinning out.

He dealt with what he considered to be fallacies in the mycological arguments for wide planting, and stated that the best known and most obvious objection to wide spacing was a financial one, but although there may be much in this objection, the most powerful argument against wide interval planting was not so much the deferment of the paying stage, or the desirability of having a safe margin of trees as an insurance against depreciation from Brown Bast, as the uncertain milking qualities of the stocks which we have to employ.

There were indications that some day it might be possible either by seed and graft selection, or anatomical investigation in the nursery, to spot the potentially good yielders at an early stage, and only plant up first-class stock. When that day arrived the planting could be of so wide a character as to give every tree ample space for development. At present there was no practicable method of distinguishing good milkers from poor milkers until the trees had reached a tappable age, and the only way of securing a proper proportion of high yielders was by planting up many more trees than would eventually be needed and thinning out the poor milkers as they were discovered.

Mr. Ashplant further said that the yields given by the different trees on any estate showed enormous disparities. It had been stated that 75 per cent of the rubber harvested was obtained from 25 per cent of the trees. The remaining 25 per cent of the crop, it might be further stated, was mostly drawn from a minority of the other trees. In all parts of an estate a few trees were found which were consistently giving out from a half to three-quarters of a cup of rubber daily throughout the year, or, expressed in another way, from 5 to 12 lb. of dry rubber annually. Right alongside these trees were others of the same age which scarcely ever yielded more than a tablespoon of latex on their best days, while for the whole year their production of actual rubber was something in the range of half a pound. These differences in productiveness were permanent. Trees of the former class remained good yielders from year to year. Poor yielders remained poor as long as they were in normal health, and any considerable rise in productiveness on their part was an unfailing sign of disease.

The presence of so many small producers on an estate kept the working costs high, while their retention year after year where the planting has been close seriously retarded the healthy development of the better-class trees. Sooner or later this overcrowding put a limit to the productiveness of the estate, and the crop, after remaining stationary for a year or two, slowly began to decline.

He then referred to the various thinning out experiments conducted on rubber estates which had led to somewhat erratic results. In regard to practical suggestions for thinning out he suggested that the proper time to commence thinning was within six months after planting out. From thenceforward and until tapping begins, all unfavorable and badly diseased specimens should be removed. Assuming that the original planting was 15 by 15 or 200 trees to the acre, a reduction to 135 or thereabouts was desirable by the seventh year. After the yield values of the trees had been ascertained by trial tappings, thinning can proceed on a yield basis. If the poorer milkers were removed at the rate of 5 to 7 per year, a 15-year-old plantation would carry between 80 and 90 trees to the acre, a reasonable figure. Progressive thinning out was a good policy for such estates as were still young, but what, it might be asked, was to be done with mature estates of 10 years and upward whereon scarcely any thinning had been done, and where the trees had already acquired the drawn up crowns and contracted habit inseparable from prolonged crowding. Was it likely that the removal of a certain number of trees per acre would at this time of day benefit those remaining? Further, was it possible, under the stress of actual estate conditions, to grade one's trees in a manner which would be satisfactory without being costly?

He stated there could be no doubt as to the answer to all these questions. The experiment he had referred to with 12-year-old trees, as well as others carried out with much younger trees, had demonstrated that selective thinning out on a yield basis was possible under estate conditions. On old estates, where the problem of selection was complicated by the presence of bark and root diseases, and perhaps also by overtapping, it would be necessary in assessing the value of a tree to take account of many factors, but although an estimate based on yield would often have to be qualified, a knowledge of the yielding capacity of a tree would nevertheless be helpful in coming to a decision as to its retention or removal.

The institution of a system of yield marks was therefore necessary, and was an indispensable preliminary to any rational scheme of thinning out. The planter required to know (1) whether the tree was dry (2) whether the tree was a very poor yielder (3) whether the tree was a poor yielder (4) whether the tree was a moderate yielder (5) whether the tree was a good yielder; (6) whether the tree was a very good yielder; (7) whether the tree was an abnormally good yielder.

He explained a system of marking trees by signs placed directly above the sector which is being tapped denoting the amount of latex collected in the cup. Trees should be marked for yield quarterly, if possible, and as soon as the trees had been given a number of these yield marks the systematic elimination of the poor milkers could begin. He also dealt with the value of yield marks in the control of disease, particularly Brown Bast. He discussed the question of whether poor yielders were worth tapping, and stated that although the obvious thing to do with unremunerative trees was to remove them and give the others a chance, one had to realize that at the present time the uneconomic price of rubber barely covered the cost of harvesting, curing and marketing. While the financial difficulty was, in most cases, absolutely prohibitive to thinning out schemes, a useful step to take would be to cease tapping poor yielders and harvest the crop of the better class trees only.

Mr. Ashplant stated that the subject of variability in the quality of latices would be dealt with very fully at another time. In South India the average rubber content of Hevea latices throughout a year would appear to lie between 2.5 and 3 lb. per gallon. For purposes of calculation the standard throughout the year will presently be taken as 3 lb. per gallon, which is rather on the high side.

He concluded his address by submitting interesting tables showing the annual yields in lbs. of dry rubber of trees of different grades with varying rubber contents, together with costs of harvesting, and stated that quite a lot of money was thrown away annually in tapping unremunerative trees. From 7 to 10 per cent of the trees on most South Indian estates were regularly tapped at a loss. A further 5 or 10 per cent were on the borderland of paying and not paying. The selection and cessation from tapping of these trees was one of the directions in which economy in working costs should be sought at the present time.—*The Bulletin* of the Rubber Growers Association, Inc., for January, 1922.

Why not Make Galoshes more Attractive ?

The vogue of galoshes brings to mind the question, why have not our *rubber manufacturers kept pace* with the tendency so noticeable in all garments, millinery and footwear to enhance the richness of the style and appearance of their goods and adapting them in period and ornamentation, to the garment they are worn with, or originating styles so compelling that designers of other articles of wear must follow the lead?

Why should women, otherwise so beautifully appareled, wear homely "gum shoes" filched from the masculine wardrobe, when they could be supplied with much handsomer ones better adapted to the needs of femininity? They could buckle behind instead of in front, or they could be made in a slip-on form to wear without fasteners. As they are mostly made with cloth interlined with rubber, the cloth covering could be any color or fabric instead of the funeral black now used. The buckles, too, could be gold, silver or enameled, made ornamental and be interchangeable so they could be used on other rubbers or overshoes.

Galoshes also could be made to knee for country wear, and could be formed to follow the contour of the limb instead of in the clumsy form they now appear.

Why longer cover handsome footwear with ill-appearing overshoes?—*Dry Goods Economist.*

Patent Granted on Diphenylguanidine

The States Metals Company, New York, announces that U. S. Patent No. 1,411,231 covering the manufacture, sale and use of the accelerator, Diphenylguanidine, for which they are the sole selling agents, has been granted to the Dovan Chemical Corporation, Newark, N. J.

Rubber Trade Associations

Rubber Association of America, Inc.

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GENERAL MANAGER AND SECRETARY: A. L. VILES.

Rubber Association Divisions

TIRE MANUFACTURERS' DIVISION

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Chairman: George H. Mayo, United States Rubber Co., New York.

MECHANICAL RUBBER GOODS MANUFACTURERS' DIVISION

Chairman: C. E. Cook, The B. F. Goodrich Co., Akron, Ohio.

RUBBER SUNDRIES MANUFACTURERS' DIVISION

Chairman: H. A. Bauman, The B. F. Goodrich Co., Akron, Ohio.

RUBBER PROOFERS' DIVISION

Chairman: J. H. Mason, The Duratex Co., Newark, N. J.

RUBBER CLOTHING MANUFACTURERS' DIVISION

Chairman: N. Lincoln Greene, United States Rubber Co., Boston, Mass.

HARD RUBBER MANUFACTURERS' DIVISION

Chairman: Harry Weida, India Rubber Co., New Brunswick, N. J.

FOREIGN TRADE DIVISION

Chairman: F. E. Titus, International B. F. Goodrich Co., Akron, Ohio.

RUBBER & FABRIC SOLE MANUFACTURERS' DIVISION

Chairman: Clifford H. Oakley, Essex Rubber Co., Trenton, N. J.

Rubber Heel Club of America

370 Atlantic Avenue, Boston, Mass.
Chairman: Robert H. Cory, O'Sullivan Rubber Co., New York.
Secretary: George A. Stetson, Boston.

Wire & Cable Section of the Associated Manufacturers of Electrical Supplies

30 East 42nd Street, New York.
Telephone: Vanderbilt 4702
Chairman: LeRoy Clark, Safety Insulated Wire & Cable Co., New York.
Secretary: C. E. Dustin.

Rubber Trade Association of New York, Inc.
(Members Consist of Crude Rubber Importers, Dealers and Brokers).

75 Maiden Lane, New York.
Telephone: Beekman 6878
President: Francis R. Henderson of F. R. Henderson & Co., Inc.
General Manager: John P. Sullivan

Motor & Accessory Manufacturers' Association, Inc.

33 West 42nd Street, New York.
Telephone: Longacre 8380
President: Edward H. Broadwell, Fisk Rubber Co., Chicopee Falls, Mass.
General Manager: M. L. Hemingway.

Tire & Rim Association

Leader-News Building, Cleveland, Ohio.
Chairman of Executive Committee: S. P. Thacher, United States Rubber Co., New York.
General Manager: C. E. Bonnett

Rubber Association of Canada

808 Royal Bank Building, Toronto, Canada.
President: W. A. Eden, Canadian Consolidated Rubber Co., Ltd., Montreal.
General Manager and Secretary: W. A. Hannay.

National Association of Waste Material Dealers

Times Building, New York.
Telephone: Bryant 1318
Chairman of the Scrap Rubber Division: Nat. E. Berzen, New York
Secretary and Treasurer: Charles M. Haskins

Mid-West Rubber Manufacturers' Association

607 South Wabash Avenue, Chicago, Illinois.
Telephone: Wabash 6677
President: W. W. Wuchter, Nebraska Tire and Rubber Co., Omaha, Neb.
General Manager and Secretary: Charles S. Sutherland

Rubber Manufacturers' Association of New Jersey

President: Charles E. Stokes, Home Rubber Co., Trenton, N. J.
Secretary: W. H. Sayen, Mercer Rubber Co., Hamilton Square, N. J.

Rubber Association of Philadelphia

President: C. D. Garretson, Electric Hose & Rubber Co., Wilmington, Delaware
Secretary: D. P. Morgan, Gustin-Bacon Manufacturing Co., 1021 Filbert Street, Philadelphia, Pa.

Rubber Club of San Francisco

President: J. B. Brady, United States Rubber Co., San Francisco, California.
Secretary: C. W. Jackson, Miller Rubber Co., 21 Van Ness Ave., San Francisco, California

ENGLAND

Rubber Growers' Association, Inc.

38, Eastcheap, London, E. C.
Chairman: Sir Stanley Bois
Secretary: Frank G. Smith

Rubber Trade Association of London
(Members Consist of Crude Rubber Importers, Dealers and Brokers).

6, Mincing Lane, London, E. C.
Chairman: H. B. Figgis
Vice Chairman: William Symington
Secretary: William G. Briggs

Ninth Annual Banquet of the National Association of Waste Material Dealers, Inc.

Held at the Hotel Astor, New York on March 15, 1922

Ninth Annual Meeting and Banquet of the National Association of Waste Material Dealers, Inc.

Many in Scrap Rubber Trade Attend Meeting in Morning and Banquet in Evening at the Hotel Astor, New York, March 15 — Scrap Rubber Division Also Meets

A GOODLY number of those in the scrap rubber industry were present at the ninth annual meeting and banquet of the National Association of Waste Material Dealers, Inc., at the Hotel Astor, New York, Wednesday morning and evening, March 15. A well-attended meeting of the Scrap Rubber Division of the association had been held at the Hotel Astor on the morning of the preceding day, and many of those who attended this meeting stayed over for the general meeting and banquet.

Meeting of the Scrap Rubber Division

Nat. E. Berzen, chairman of the division, called the meeting to order at 10:30 a.m. March 14. H. F. Masman, manager of the Traffic Department of the association, rendered a report on the case now pending before the Interstate Commerce Commission in which a sixth class rate had been asked for on scrap rubber. The examiner who heard the case has reported favorably, the matter has been argued orally before the Commission, and a final decision is expected within the next sixty days.

Mr. Berzen was re-elected to serve as chairman for the Division for the year ending March 24, 1923. The Grievance Committee, of which Aaron Bers of E. Bers & Co., New York, is chairman, was also re-appointed for the ensuing year.

The Annual Meeting of the Association

Despite the fact that the waste material industry has just passed through a year of very trying conditions, a spirit of optimism was evident at the annual meeting of the greater Association which was called to order on the morning of March 15 by Frank C. Overton, president.

Following the reading of the minutes of the previous meeting and the reports of the various committees and officers, Mr. Overton appointed a committee to meet with the committee of the Felt Manufacturers Association. President Overton then submitted his annual report which received very close attention; it was unanimously voted that the report be printed and distributed to members, and Mr. Overton received a rising vote of thanks for the great service he had rendered the Association during the past year.

Charles M. Haskins, secretary-treasurer, then submitted the report of the secretary. The next matter for consideration was the election of officers for the ensuing year. By unanimous consent, President Overton was re-elected by acclamation. The secretary was then instructed to cast one ballot for the balance of the ticket, consisting of twelve directors to serve for two years. Those chosen were: Louis Birkenstein, H. H. Cummings, Robert Johnson, Jr., E. I. Keller, Henry Lissberger, Alex Luria, Herman Muehlstein, John A. Murphy, Ivan Reitler, James Rosenberg, George B. Smitheman, and Clarence B. White.

Directors Elect Officers

Following the adjournment of the meeting, the board of directors met for their annual meeting and elected the following officers: Harry R. DeGroat, first vice president; James Rosenberg, second vice president; Fred Mayer, third vice president; Charles M. Haskins, treasurer.

The secretary's previous term having expired, he was reappointed for a term of three years.

The Annual Banquet

The ninth annual banquet of the greater association, which was held at the Hotel Astor, the evening of March 15, was as complete a success as any banquet held by the association since its inception.

Considering business conditions the attendance was unexpectedly large. The banquets of the association, although always joyful affairs, have always been conducted with a dignity which has brought added prestige to the association. Everything from the menu to the decorations of the ball room was of the highest order. A very good dinner was served, and the quartette in charge of the community singing succeeded in making that feature a pronounced success. Instrumental music was also supplied by an excellent orchestra.

Following the dinner, and after reading wireless messages of congratulations from Jebb Bros. of England and Norbet Levy of Berlin, associate members, President Overton introduced as the first speaker Rev. Percy Stickney Grant, who gave an enjoyable address on "Waste Material". The members and their guests were then entertained by a humorous talk by Williard Scott, which was thoroughly enjoyed.

The principal speaker of the evening was Hon. Carroll L. Beedy, Congressman from Maine.

H. H. Cummings was chairman of the banquet committee.

Scrap Rubber Men and Reclaimers Present

Among the scrap rubber dealers and reclaimers present at the banquet were:

Nat. E. Berzen, chairman of the Scrap Rubber Division of the Association.

Aaron Bers of E. Bers & Co., New York; Albert Buxbaum of the Leo Meyer Co., Akron, Ohio.

Louis Birkenstein, former president of the National Association of Waste Material Dealers, and Milton Birkenstein, both of S. Birkenstein & Sons, Chicago.

E. O. Cummings, H. H. Cummings, W. L. Cummings, William H. Cummings, Jr., and William Eisermann, all of the firm of W. H. Cummings & Sons, New York.

Joseph F. McLean and Samuel H. Dodd of the Pequanoc Rubber Co., Butler, N. J., reclaimers.

Samuel Greenfield, Buffalo, N. Y.

Clark W. Harrison of the Bloomingdale Rubber Co., New York, reclaimers and heel manufacturers.

Herman Muehlstein, Julius Muehlstein, W. J. McCauley, P. Meyerfeld, George Friedman and Alex Schulman, of the firm of H. Muehlstein & Co., New York.

Jack Sider of the Lowenthal Co., Chicago; Louis Spack of the Eastern Tire & Rubber Co., Boston.

W. F. Stark of J. H. Stedman & Co., South Braintree, Mass.

Hermann Weber, Hoboken, N. J.

The Story of the Kew Gardens Rubber Trees

The story of the rubber trees of the Kew Gardens in London is a classic of the rubber trade which is being recalled by the press, and will always be of interest to those who have not read it.

About fifty years ago when the value of rubber was just becoming known, representatives of British interests made an expedition to Brazil to secure specimens and seeds in order that the trees might be acclimated to India and other British possessions in the Far East. The Brazilians, who appreciated the value of their monopoly, refused to allow the export of seeds or plants, yet 70,000 seeds were secured and smuggled out of the country.

The custodian did not risk the germination of the seeds on the long trip to Ceylon, but went direct to London, arriving at Kew Gardens about midnight where the seeds were planted at once. A fraction of the plants thrived, and a year later 1700 were carefully shipped in tiny hot-houses to Ceylon.

At a place called Heneratgoda in the equatorial forest a botanical garden had been prepared for their reception. The survivors stand today, mute witnesses to the greatness of the industry which sprang up from their progeny in Ceylon, the Federated Malay States and the Netherlands East Indies.

ABSTRACTS

Technical — General — Commercial

Accelerating the Vulcanization of Rubber

British Patent No. 173,545 is concerned with a process of making accelerators and using them in the vulcanization of rubber. Paranitroso-dimethylaniline has been used for this purpose and the present process is for producing from this and other paranitroso derivatives, strongly basic accelerators which are more stable in storage and less poisonous. The paranitroso compounds are treated with one or more than one, and less than two molecular equivalents of hydrogen sulphide in neutral solution. The group in the para position may be an amino group, a substituted amino group or an hydroxyl group.

The process is carried out by dissolving paranitroso-dimethyl-aniline in benzol or water, and then hydrogen sulphide is passed through until the desired amount has been absorbed. The product that is obtained in this manner is strongly basic and reacts rapidly with carbon disulphide with the liberation of gas and the evolution of heat. Paranitroso-phenol may be treated in the same manner. The accelerator is added to rubber in the proportion of 0.5 to 2 per cent.

In a second patent, British Patent No. 173,546, the products obtained in the above process are treated with carbon disulphide, whence there are produced substituted thio-ureas which are also accelerators of vulcanization. Other bases such as para-dimethyl-phenylene-diamine may also be used. These compounds may be produced by the direct action of carbon disulphide on the bases. During this reaction there is liberated sulphuretted hydrogen, which may be made use of in a cyclic process, in which it is used for reducing the peranitroso derivatives simultaneously with the reaction of the product with the reaction of the product with carbon disulphide. The reaction takes a cyclic course when once started.

For example a carbon disulphide solution of paranitroso-dimethyl-aniline and aniline is treated with an excess of hydrogen disulphide. There is obtained a mixture of the para-amido compound and thiocarbanilide. Other mixtures of thiourea derivatives are also described in the patent.

Rubber Celluloid Composition

In United States Patent No. 1,392,240, which is assigned to the Erwa Chemical Manufacturing Co., there is described a method of preparing a rubber composition which may be used for patching punctures and for filling up holes and cracks in rubber tires and other rubber ware. The particular object is to make a preparation which may be applied to the tire in a liquid or semi-liquid condition and which would dry quickly after application. This composition consists of rubber and celluloid combined with a suitable solvent. Any sort of synthetic or natural rubber may be used for this purpose, but the best results are obtained from Para rubber, preferably in the washed form. Pure celluloid or celluloid substitutes may be used and the solvent employed is benzol, ether, acetone etc.

An example of a composition which gives very good results is as follows. One pound of rubber, one pound of celluloid, one gallon of ether, five eighths of a gallon of ether and one quarter of a gallon of acetone oil. These ingredients are mixed together in the form of a colloidal solution, in which both the rubber and celluloid are held in colloidal suspension. To render the composition non-inflammable there may be added one eighth of a gallon of carbon tetrachloride. The composition of solvents is used rather than any single one, for the purpose of securing certain effects. Thus, the ether and acetone serve to dissolve the greasy material on the surface to which the composition is applied. Acetone oil is a good solvent of celluloid and rubber. The solution may be made in separate parts and these combined to give the final mixture.

Glue-Rubber Composition

The process of compounding glue and rubber, that is described in United States Patent No. 1,396,837, which is assigned to the Goodyear Tire and Rubber Co., is divided into two parts or stages. In the first stage the glue is brought into solution or into the form of an emulsion by the use of water. Then to this solution there is added the finely ground solid or powder constituent which it is desired to have introduced into and disseminated through the rubber. The mixture is then incorporated with the rubber with the result that the rubber composition is more uniform and less mechanical manipulation is required to bring aboat the same. It may also be advisable to submit the rubber composition to the action of a vacuum drier in order to remove the water prior to vulcanization.

In carrying out this process about 50 pounds of glue are gelled with 80 pounds of water and to this gel there are added 5 pounds of pine oil. Then the pigment, say about 100 pounds of gas-black, is incorporated, and the completed mixture is then ready for mixing with the rubber. The use of pine oil is to prevent evaporation of the water during the mixing process in the rubber mixing rolls, as such evaporation would tend to produce lumpiness and hardening of the glue. Instead of pine oil asphaltic oils, turpentine, glycerine may be used.

Acetone Soluble Constituents of Rubber

The determination of the constituents in rubber and rubber-ware, which are soluble in acetone, has always been difficult to carry out so as to get check results. An investigation into this subject was made by J. Lagervist, which was published in the Swedish journal Svensk Kem. Tidskr., volume 33 pages 198 to 205. The influence of the fineness of the subdivision of the rubber, the drying of the rubber sample, the properties of the acetone used in the extraction, the character of the apparatus, the time of the extraction and the method of drying the same was determined as far as it affected the accuracy of the analytical results. The method of drying the acetone extract is perhaps most important in this connection. It was found that when the extract was dried under atmospheric pressure at a temperature of 90 to 105 degrees C, the results were considererably lower than when the method was carried out in a vacuum. In the first case it was practically impossible to obtain constant weight.

Tire Vulcanizer

In British Patent No. 174,038 there is described a vulcanizer which is particularly useful in vulcanizing the joints of rubber tires. The mandrel comprises a hollow cylinder which has double walls, enclosing a steam space and provided with a longitudinal slot closed by a removable bar which fits in such a manner that the outer surface is flush with the surface of the cylinder. The tube that is to be vulcanized is passed through this slot, which is then closed and inflated so that it may be forced back over the end of the mandrel, bringing the joint into contact with its surface. After deflation the tube clings to the surface of the mandrel, which is slightly larger in diameter than the uninflated tube, but additional clamping means may be used. Removal of the finished tube from the mandrel is effected by inflating it again.

Glue-Rubber

This product comes from the French Ivory Coast in Africa and is derived from the plant, known as Carpodinus hirsutus An analysis of the product showed it to contain 25 per cent of water, 66/6 per cent of resinous matter and 7.1 per cent of pure rubber. For further details see Gummi Zeitung, 36, 160.

The Polish Rubber Industry and Its Prospects for Development

Material for this Article was Obtained from a Review by Professor T. Warynski in "L'Est Polonais," Warsaw

THE Polish rubber industry which was barely in existence before the war is at the present time in process of organization. Within a period of a few months the successive establishment of three rubber concerns has been brought to the public's attention. Of these, one is located in Congress Poland, the others in the former Prussian province. Up to the present day, Galicia alone has no rubber plant.

One of the above enterprises, "Polonit" located in the Praga, a suburb of Warsaw, has already started production, principally of automobile tires. The most important of these new concerns, "Kauczuk Co.," with plants at Bydgaszcz and central offices in Warsaw, will probably begin to produce within six months; this company disposes of considerable capital which will enable it to secure first class equipment and to start production on a high scale. Unusually large shops are being erected while orders for the equipment have been placed with one of the most reputed manufacturers of rubber machinery (Bridge Co., Castleton, Eng.). As to the third of these organizations, the "Pneumatyk Co.," established in Poznan, its capital appears to be rather limited and owing to the high cost of rubber machinery (an ordinary set of mixing rollers costs approximately from 5 to 6 million Polish marks), there is every indication that this company does not, as yet, contemplate quantity production.

Incidentally it is worth while noting that a small rubber heel factory has been in operation in Warsaw proper and has placed products of a fair quality on the market.

Financial circles are also being advised that certain Polish banks are preparing to start the operation of an already equipped rubber plant, the exploitation of which had been prevented by the outbreak of the world war.

In round figures, present indications are that the Polish rubber industry will operate early in 1922 a total of from 30 to 35 mixing mills with a total daily production of from 7 to 9 tons of finished articles.

The Prospects for Development

The development of the Polish rubber industry remains, however, essentially contingent upon the two following factors:

1. The purchasing capacity of the domestic market.
2. The prospects for exportation of Polish manufactured rubber articles.

Before endeavoring to analyze the foregoing factors it is important to differentiate between the various categories of rubber and gutta-percha industries which may be classified, roughly, into industries specializing in the production of large articles such as automobile tires, industrial accessories, clothing goods and cables, and industries equipped for the manufacture of smaller articles, the latter class comprising in the first place vulcanite goods together with surgical furniture and supplies, toys, rubber heels, etc. This classification of course is in no way rigid, as, for instance, tank and piping packings, gaskets, etc., may be included in the list of industrial accessories, though their manufacture is frequently subsidiary of the manufacture of vulcanite. In the same order, a factory equipped for the manufacture of industrial rubber articles can, without undergoing any modifications of equipment, shift to rubber heel quantity production.

Reverting to the prospects for development of the Polish rubber industry one may derive a fair idea of present market conditions from the following remarks. Domestic demand is mostly for the following articles:

1. Pneumatic and solid tires chiefly for army and government consumption, notwithstanding industrial and private requirements, rather restricted for the present, but bound for an early rise. (Fair demand.)
2. Industrial articles for factories, mines, railroads, navigation companies, army engineering, plumbing installation, laboratories. (Very large demand.)
3. Wearing apparel (rain proof coats, overshoes, etc). (Large demand.)
4. Insulating material and cables. (Small demand.)
5. Vulcanite goods. (Demand as yet small, rapidly growing, however, with the progress of industrialization of the country.)
6. Fancy articles and rubber heels. (Large demand.)
7. Surgical instruments and toys. (Small demand.)

According to available figures the production of from 50 to 60 sets of mixing rollers is necessary to supply the country's own needs. That figure as compared to the number of mills which are likely to be in operation by the coming spring shows an excess of approximately twenty. The deficiency must be made up by importation. Furthermore, one must take into consideration the rapid increase in the capacity of the Polish market which is likely to multiply itself many fold within the next ten years. Conservative estimates figure that the probable consumption of rubber goods in Poland will in 1930 equal the output of 159 sets of mixing rollers.

The Export Outlook

As to the prospects of export of Polish manufactured rubber goods it appears that endeavors should be directed toward the eastern and southeastern European markets. Notwithstanding the competition of Riga and the contingency of revival of the Petrograd port, one may easily foresee the possibility of continuously operating for export 100 additional mixers.

In short, the near future is likely to see the installation and the operation in Poland of some 150 to 200 mixers for domestic and foreign requirements. Estimating the purchasing and erecting cost per set of mixing rollers at $10,000.00 ($100,000.00 for a medium size plant operating 10 mixers) it appears that a capital of from one and one-half to two million dollars would be required for the organization of the Polish rubber industry. Part of this capital has already been secured and it is probable that the balance could be furnished without great difficulty by Poland whose available capital is far in excess of current estimations. Foreign capital would be most welcome providing it would not create in Poland a monoply situation contrary to the interests of the country and that proper control maye be exercised upon it aiming at the elimination of unfair competition against nationally financed enterprises.

There is every reason to believe that thanks to the energy of the present Minister of Finance, the unhealthy period of speculation in which Poland has been living for the past two years is nearing its end and that capitalists will soon be lending their support to national industries and especially to one of the most promising, the rubber industry.

Reprinted from the *Journal of the American Polish Chamber of Commerce and Industry, Inc.*, issue of February, 1922.

Rubber as a Pavement

It is reported from Ceylon that considerable impetus has been given to the use of rubber in the form of blocks for paving streets. The application of rubber for such a purpose has been given attention at various times in this publication. It would appear that rubber can be used to very good advantage in this manner. The results obtained in Colombo, Ceylon, where the latest experiments with rubber pavements have been carried out appear to corroborate earlier English experiments along the same lines. Rubber is proving to be a very effective paving material.

NEWS OF THE INDUSTRY

The Industrial Rubber Situation

Tire Production Now Comparatively Stable—Rumors of Rise in Tire Prices Neither Confirmed nor Denied—Unemployment Decreasing in Akron

According to reports from many sources the industrial rubber situation is slowly but undeniably improving. Conditions in Akron are ever an index to the general tire situation, and the activities at all the tire plants point to better conditions in the industry.

It is estimated by experts that during March the Akron tire plants turned out 400,000 more tires than they did in the corresponding period last spring. It is reported that every rubber company in Akron is operating on a 60 per cent basis at least. In addition, several of the smaller companies are producing to capacity and a few of the larger plants are running on an 80 per cent basis. On the whole, Akron is said to be operating at better than a 75 per cent basis.

Spring Delivery Started

Spring delivery of tires started on April 1. It is reported that these orders are large and are being filled for the most by tires recently manufactured. In any case, dealer-demand will empty many of the warehouses and will put the companies on a basis of producing tires to fill orders already in hand and being received.

Rumors of Rise in Tire Prices

Rumors of an increase in the price of tires have neither been confirmed nor denied at this writing by any of the large companies. There are strong arguments for increasing present prices. It is well known that tires and tubes are selling at less now than before the war. In spite of wage cuts, crude rubber cheaper than ever before and lower priced cotton, manufacturers contend that they cannot make a sufficient percentage on tires at the very low levels to which prices were reduced last fall. High selling costs are said to be the principal difficulty. In many instances selling costs are said to be 25 per cent of the total expense of production.

Unemployment Decreasing

It is reported that unemployment in Akron and other industrial centers is slowly decreasing. In Akron alone, the number of unemployed was cut by the placing of 4,000 hands since the first of the year.

The Coal Strike

The coal strike has had little effect on industry thus far, according to reports received by the Department of Commerce and other Government departments. On March 30 the Department of Commerce announced that figures received since March 20 "indicate that business is still making progress in its recovery from the memorable depression of 1921." It is the opinion of Government officials that no severe reaction will be felt during the early days of the strike because of the large reserves of fuel which have been accumulated by most of the important industries. If the strike continues for sixty days or more, it is a different question. For the time being, however, it has caused practically no depression.

Radio Equipment Helps Hard Rubber Plant

The Siemon Hard Rubber Co., Bridgeport, Conn., has been increasing its output due to the sudden demand for electrical wiring supplies for radio outfits. They are going on a 50-hour schedule per week, and are taking back their former employes.

To Standardize Rubber Analysis

Professor S. W. Collier of the Bureau of Standards at Washington was in conference March 21 and 22 with Professor H. E. Simmons and a committee of chemists from the various rubber companies at the Municipal University of Akron for the purpose of working out a program for the standardization of methods for the chemical analysis of rubber compounds.

The recommendations of the committee, it was announced, will be adopted by the American Chemical Society for general use in the rubber industry. Among the chemists who attended the conference were: Harold B. Pushee, General Tire & Rubber Co.; F. J. Dugan, Goodyear Tire & Rubber Co.; E. W. Oldham, Firestone Tire & Rubber Co.; and A. H. Flower, Falls Rubber Co., Cuyahoga Falls.

Annual Meeting of the Rubber Association of Philadelphia

At the annual meeting of the Rubber Association of Philadelphia held Jan. 28 the following officers and executive committee for the present year were elected:

President, C. D. Garretson of the Electric Hose & Rubber Co., Wilmington, Del.

Vice President, F. L. Bacon of the Gustin-Bacon Mfg. Co., Philadelphia.

Treasurer, Jacob R. Baltz of the General Tire Co. of Philadelphia, Inc.

Secretary, D. P. Morgan of the Gustin-Bacon Mfg. Co., 1021 Filbert street, Philadelphia.

Executive Committee: F. L. Bacon, Jacob R. Baltz, A. Boyd Cornell of the Hamilton Rubber Mfg. Co., Trenton, N. J.; Joseph Emerson of the New York Belting & Packing Co., Philadelphia; C. D. Garretson, John Kearns of the Lee Tire & Rubber Co., Conshohocken, Pa., and William F. Metzger of the Quaker City Rubber Co., Philadelphia.

This organization is unique in the rubber trade, as it welcomes in its fold both manufacturers, wholesalers, tire dealers and sales organizations from Pennsylvania, New Jersey and Delaware, endeavoring to bring together the factors of the mechanical goods and tire trades in the Philadelphia region in harmonious association.

The Report of the Goodyear Co.

The annual meeting of the Goodyear Tire & Rubber Co., Akron, Ohio, was held at the Goodyear club house March 27. Three new directors were elected, namely: Russell L. Robinson, Francis Seiberling and H. H. Springford. All other directors and officers were re-elected. Mr. Springford was named assistant to the president by the executive committee which was also reelected.

The income account of the Goodyear Tire & Rubber Co., Akron, Ohio, for the ten months ending Dec. 31, made public March 27, shows a surplus of $3,620,570. It is pointed out that the results for the period are not comparable to those of other years as they were arrived at after a complete reorganization of the company with a readjustment of capital and cover ten months only; the previous reports of the company were for full years.

The balance sheet as of the end of the year shows total current assets of $66,-320,097, against current liabilities of $6,210,229. Cash amounted to $14,423,-640, accounts and notes receivable, $10,194,499, and marketable securities, including acceptances and Treasury certificates, $9,469,180. Inventories were carried at $32,232,778. The sales and profits shown in the income account reflect the liquidation of the finished product inventory of Feb. 28, 1921, $19,-622,250, on which no net profit was realized.

Neither the company nor its subsidiaries had any banking indebtedness, E. G. Wilmer, president, said in the report.

"It is gratifying to know," he added, "that in spite of the curtailment in buying that seasonally occurs during the winter months the company's volume of business during the present winter has far surpassed that of a year ago."

Other directors were elected as follows: E. G. Wilmer, Roger Hyatt, P. W. Litchfield, Grayson M. P. Murphy, J. R. Nutt, Robert C. S. Schaffner, Armin A. Schlessinger, A. H. Scoville, G. M. Stadelman and Ralph Van Vechten. The directors on the same day re-elected the following officers:—E. G. Wilmer, president; G. M. Stadelman and P. W. Litchfield, vice-presidents; H. H. Springford, assistant to the president; P. H. Hart, treasurer; P. H. Le Roy, assistant treasurer; C. A. Stillman, secretary; W. D. Shilts and C. F. Stone, assistant secretaries; C. H. Brook, comptroller; and C. L. Weberg, H. D. Hoskin, and A. F. Eggleston, assistant comptrollers.

Lake Shore Rubber Co. Begins Production at Wellington

At a meeting of the Lake Shore Rubber Company, Elyria, Ohio, on March 3 plans were laid to begin production at the Wellington plant of the company on March 13. An effort is also being made to start production at the Elyria factory About fifty men are now employed at the Wellington factory in the manufacture of toy balloons.

The stockholders elected Henry W. Ingersoll, H. L. Miller, J. A. Lucas, C. M. Theobald and W. W. Willis to the board of directors; Mr. Ingersoll was appointed business engineer, Mr. Miller in charge of production and Mr. Willis sales manager.

R. E. Hayes Killed in Accident

Robert E. Hayes, branch manager of the B. F. Goodrich Co. branch at Denver, Colorado, was killed March 8 three miles west of Bergan Park, Colorado. Mr. Hayes is said to have lost control of the automobile he was driving during a blinding snow storm. Other occupants of the car were uninjured.

Miller Rubber Co. Meets

The annual meeting of stockholders of the Miller Rubber Company was held at the offices of the company at Akron Ohio, on March 9. All the directors were unanimously re-elected; all officers were also re-elected, including Jacob Pfeiffer, president; C. T. Grant, vice-president; William F. Pfeiffer, secretary, treasurer and general manager; R. R. Jennings assistant treasurer; and Charles R. Wetsel, assistant secretary.

The following excerpts are taken from the report submitted to the stockholders by Jacob Pfeiffer, president:

The net sales for the year were $18,983,677, which is 72½% of the net sales for the year of 1920, amounting to $26,182,391. The volume of business on tires during the year of 1921 expressed in commodity units was greater than during 1920 by approximately 5%, with sales in other lines also showing an increase in volume.

Drastic reductions in selling prices on tires made during the year decreased the amount which otherwise would have been received for tires sold during the year by approximately $3,000,000 thereby reducing profits to that extent.

Total inventories were reduced from $9,321,803 to $3,981,922 making a total reduction of $5,339,881. The inventories of raw materials and supplies were valued at the lower cost or market prices, which prices are reflected in the process and finished products on hand.

Due to declining market prices during the year the Company was obliged to absorb $1,633,000 further shrinkage in its inventory values, which together with a provision of $463.00 for loss on commitments to come in 1922 aggregates $2,096,000, all of which was recovered in the operations except the difference in the deficit of $555,000.

After writing down inventories and deducting an amount considered adequate to cover doubtful accounts, discounts and contingencies, the current assets of your Company amounted to $7983,224, less current liabilities of $2,060,437 (all bank indebtedness being paid) which gives the Company the difference of $5,922,387 net working capital—or 31c. on each dollar of the net volume of business the company did last year.

Ashtabula Tire & Rubber Co. Begins Production

The Ashtabula Tire & Rubber Co., Ashtabula, Ohio, which has purchased what was formerly the Pearce Tire & Rubber Co. plant in that city has started production. James H. McGachen, factory superintendent, took charge on March 13.

The President's New Mount

President Harding is seen in the illustration herewith mounted on "Harbel," the first horse he had ridden in thirty years and which is a recent addition to the White House stables. The President took his first ride on "Harbel" while a guest last summer at the Edison-Ford-Firestone camp near Big Pond, Md. Since then he has taken to horseback riding frequently for exercise. He has ridden several of the Army Quartermaster Corps horses in the White House stables but none suited him so well as this

PRESIDENT HARDING ON "HARBEL"

thoroughbred Kentucky sorrel gelding. He was the prize horse of the stable of 21 thoroughbreds maintained by Harvey S. Firestone at Akron, Ohio. During a visit to Washington Mr. Firestone arranged for the President to secure "Harbel."

The horse is named for Harbel Manor, Mr. Firestone's beautiful estate in Akron.

Rubber Association Year Book for 1922 Issued

The Twenty-Second Year Book of the Rubber Association of America, Inc. was recently distributed to members. It is divided into two sections, the first of which deals with the personnel of the organization; the constituency of permanent committees and divisions; and the membership roll of the association. Section Two carries the charter; the constitution and by-laws; the officers and directors of the association since its organization in 1900; necrology and memorial. The book, which was prepared by A. L. Viles, general manager and secretary, follows the lines of the preceeding year book.

Fisk Rubber Co. Reports 1921 Profits of $3,336,467

The annual report of the Fisk Rubber Company for the year ended Dec. 31,1921, shows net profits of $3,336,467 after depreciation and a balance of $2,011,379 after interest charges. The surplus after preferred dividends, but before inventory adjustment, amounted to $1,494,464. Inventory adjustments and other charges amounted to $10,251,850, all of which were charged to the profit and loss account, with the result that at the close of the year the profit and loss surplus aggregated $1,873,417.

The report for the year contains a separate statement covering the last six months of the year, the period following the reorganization of the company. This statement shows that what profits were reported in 1921 were made in this period. The statement covering the last half of the year shows gross sales of $22,407,179 and net profits of $2,607,432 after depreciation, selling and other expenses. After allowing for interest and other fixed charges there remained a surplus of $1,873,417, which corresponds with the surplus reported for the full year.

As a result of the reorganization, goodwill, which was carried in the balances at the close of 1920 at $10,625,002 was reduced to the nominal sum of $1. Offsetting this, however, there are $10,000,000 of first motgage bonds among the liabilities, against nothing the previous year. Cash on hand totaled $2,079,124, against $3,018,591, while inventory was reduced to $13,060,207, against $29,507,210 at the close of 1920.

H. T. Dunn, president, in his remarks to the stockholders, said in part:

"The combined sales for the entire year 1921 of the Fisk, Federal and Ninigret Companies was $39,269,323, compared with $59,172,358 in 1920, a decrease in sales value of 33½ per cent. This decrease in sales value resulted from revisions in sales prices—the decrease in unit sales being put at 2 per cent.

"The present year is starting with dealers' stocks low, our own finished inventory normal, and the sales and earnings outlook promising."

Air Trips are no Novelty to Europeans Says Goodyear Man

W. D. Shilts, assistant secretary of the Goodyear Tire & Rubber Co., Akron, Ohio, who returned to Akron recently from England where he had spent about five weeks on the business of the company, says that Europeans think little more of an air trip than the average American does of a journey in a train.

"The airplane people are establishing a reputation for safe transit and do not send their planes out in foggy weather or when a storm is brewing," Mr. Shilts

W. D. Shilts

reported. "Otherwise the service goes on regular schedule.

The trip from London to Paris and vice versa is made in about two hours and fifteen minutes in contrast to the trip from London by train to Folkestone or Dover and across the channel by boat and then to Calais or Boulogne to Paris by train which takes about eight hours. The fare is about $24. Baggage is carried on the planes, and a bus calls for a passenger at his hotel in London and takes him to the flying station another bus meets the plane at the flying field in Paris and delivers him to his hotel there."

Business conditions abroad are showing gradual improvement, Mr. Shilts said.

General Tire & Rubber Co. Shows Profit for First Quarter

Announcement is made by the General Tire & Rubber Company, Akron, Ohio, that its sales for the first quarter of the new fiscal year, just completed, have been 65 per cent larger in dollars and cents than the sales for the same period a year ago. In units the sales increase for the period covered by the announcement is 100 per cent.

In December, when the annual meeting of the company was held, there was considerable comment over the fact that though a number of other tire companies operated at a loss during 1921, General made money steadily, its sales had increased and its dividend obligations had been met without a single exception. At that time Wm. O'Neil, vice president and general manager, predicted that the company's business would in all likelihood be doubled in 1922. The record for the first quarter supports the prediction and it is stated that the business is still growing steadily.

Since the beginning of the present fiscal year General has paid two dividends of 2 per cent each on the common stock of the company and one dividend of 1¾ per cent on the preffered.

Mid-West Association Meets

The regular monthly meeting and luncheon of the Mid-West Rubber Manufacturers' Association was held at the Hotel Morrison, Chicago, March 14 with a large attendance. The meeting was presided over by the President W. W. Wuchter, general manager of the Nebraska Tire & Rubber Co., and was called to order at 11:30 a. m.

The proposition to hold meetings every three months was voted down by the directors, and meetings will be held as usual on the second Tuesday of each month.

After luncheon the principal speaker, O. C. Frisbie of the LaSalle Extension University, in speaking on traffic questions, urged those present to watch their freight rate reductions so that their commodities will be reduced in proportion with the others.

Thomas Whitehead former president of the National Tire Dealers' Association expressed the belief that the very near future will see a rise in tire prices. But he told those present not to expect an abnormal business this spring and summer. He also stated that there was an unusual call for tires noted in such states as Illinois, Iowa, and Wisconsin. He declared that the manufacturers' new warranty taking the place of the mileage guarantee, met with great favor among users of tires and that in the territory with which he is in touch, he has yet to see a tire user who has been dissatisfied with the Manufacturers' Warranty.

Members present were also advised of the efforts being made in Chicago and Illinois to secure legislation which will protect the legitimate tire dealer against those who sell used tires or dealers who misrepresent their merchandise and of other legislation being sought, including a measure by which dealers who sell tire sets as much as 50 per cent below the listed price, be compelled to pay the proper tax to the Federal Government.

Tire fabric men present reported little change in the market but stated that prices were continuing firm.

The Coast Tire & Rubber Co., Oakland, California was elected to Regular Membership.

The next meeting of the Association will be held on the second Tuesday in April at the Hotel Morrison, Chicago.

Charles S. Leslie Celebrates 25 Years in Rubber Trade

Charles S. Leslie, the well known and popular crude rubber broker located at 24 Stone Street, New York, will celebrate his twenty-fifth anniversary in the rubber trade on April 18.

He started in this business in 1897 with the old firm of Reimers & Meyer, who at that time were one of the very few importers of crude rubber. Upon their liquidation he went with the new firm of Reimers & Co. until their dissolution. He was also connected with the

C. S. Leslie

firms of Poel & Arnold, Arnold & Zeiss and then Poel & Kelly up to the latter part of 1918, at which time he entered into the brokerage business for his own account.

While he was connected with the above concerns, he received the training which qualifies him for the business he now is in. Starting as an office boy with Reimers & Meyer, he became sampler and examiner, dock shipping clerk and finally traffic manager, which position he held with the last three firms. During these years he became thoroughly acquainted with all grades of crude rubber, balata, gutta percha, pontianak, etc., and is a recognized judge of qualities. He specializes as a broker for both manufacturer and importer, and is well equipped to handle their business.

Sound Rubber Co. Meets

Stockholders of the Sound Rubber Company, Tacoma, Wash., manufacturers of Sound tires held their annual meeting in that city recently. Directors elected were Morton Gregory, R. J. Tompkins, E. M. Hayden, J. L. Carman, M. Evans, U. E. Harmon and A. E. Braden.

At a subsequent meeting of the board of directors the following officers were elected: Morton Gregory, president; U. E. Harmon, vice-president; and A. E. Braden, secretary and treasurer.

Hood Rubber Co. Sales for 1921 Aggregate $24,000,000

The financial status of the Hood Rubber Company, Watertown, Mass., is the subject of the following statement made recently by Frederic C. Hood, treasurer:

"So far as Hood Rubber is concerned, the period of depression and liquidation and of merchandise deflation is over.

"The winter just closing was a good average one for sale of rubber footwear. Retailers are well cleaned out of such goods and advance orders for fall mean that our 1922 sales should be larger both in quantity and in value than in 1921. Our plant is running today at 70 per cent capacity on rubber footwear and at full capacity on tires and canvas foot-

FREDERIC C. HOOD

wear. Because of many additional dealers in our tires, we are assured that, notwithstanding an average reduction in value per tire of about 40 per cent, we shall have an increase in tire business amounting to considerably over $1,000,000 for 1922 as compared with 1921.

"We estimate that total sales for calendar year 1922 will represent a value of $27,000,000 as against $24,000,000 for 1921 and $32,000,000 for 1920. However, if goods sold this year were to be translated into terms of money values of two years ago, 1922 sales would be nearer $35,000,000 than $27,000,000. Our sales for the first three months of 1922 will exceed same three months of 1921 by over $1,000,000. For the current month of March, sales will exceed $2,500,000, and only a great shrinkage for the next nine months could affect my 1922 estimates.

"March earnings are at a rate sufficiently large to earn the dividend on the common stock for the quarterly period more than twice over.

"At the end of 1921 our net quick assets amounted to $6,200,000. Of the figures of other rubber concerns that I have seen, none show a smaller percentage of loss of net quick assets to sales than was shown by the Hood Rubber Co.

"It is evident that we touched bottom in October, 1921, since which time we can see a steady improvement in our position because of our economies in operation, liquidation of our customer's stocks of goods, particularly in the Mississippi valley, and improved money condition generally.

"Plenty of good orders have been received recently and throughout the entire rubber goods trade there is a distinctly different feeling than existed even six weeks ago. The last deliveries on any of our purchase contract commitments above current prices were completed by June, 1921. Our total raw merchandise stands today on our books at below the present quotations. Our manufactured goods are carried on our books at factory cost and show a satisfactory margin of profit as sold, and there were manufactured in the last four months more value of goods than we have on hand. We have no losses to face in the matter of rebates and there are no mark-downs in merchandise to be effected."

Azo Zinc Oxides Hang up New Sales Record

Sales of Azo Zinc Oxides for the first three months of 1922 by the American Zinc Sales Company with headquarters at Columbus, Ohio, have broken all previous records of this company.

Additional furnace units doubling the production of the new Columbus plant have been put in operation to care for the extraordinary demand and to insure a steady supply of Azo Zinc to their many new friends as well as their old ones. This is the second large expansion of the operating facilities of the manufacturers of AZO products within the past year.

Called upon by insistent demands of the paint and rubber industries to manufacture Zinc Oxides of quality, the American Zinc, Lead & Smelting Co. some six years ago placed into operation a sizable plant at Hillsboro, Ill., the output of which was almost immediately absorbed, until in January, 1921 a new plant at Columbus was placed in operation. The Columbus plant is one of the most modern in this country in zinc oxide operations and is equipped with improved metallurgical appliances.

The strategical location of the Columbus plant in the center of the rubber trade has been a tremendous factor in the great success of this company. With a perfect network of seven great railroad systems radiating from their plant and the location of warehouse stocks in principal cities throughout the country, the AZO people have been able to give from twenty-four to seventy-two hour deliveries to all shipping points insuring full cooperation with the trade in this era of conservation and economy.

Indications for the future give excellent promise of the further expansion of the manufacturing facilities of AZO Zinc Oxide and the reserves of ore assured by their mining properties insure the most exacting requirements of the trade being taken care of for many years to come.

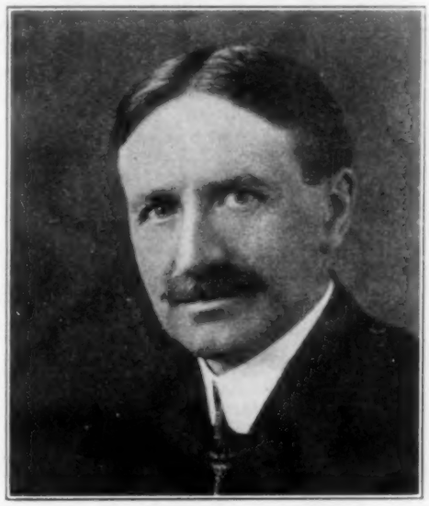
Firestone Declares Dividends

The Firestone Tire & Rubber Co., Akron, has declared the regular quarterly dividend of 1½ per cent on the six per cent preferred stock, payable April 15 to holders of record April 1.

The company liquidated over $10,000,000 bank loans in 1921, and recently placed at work over 700 additional hands at its Akron plant.

In addition to the great plant at Akron the company owns one at Hamilton, Ontario, Canada, which will be completed this year. The company owns some 200 acres of land for manufacturing purposes and the floor space in its factories approximate forty acres.

The company controls the Firestone



HARVEY S. FIRESTONE

Steel Products Company, manufacturers of rim, bands and other steel products at Akron; the Firestone Tire & Rubber Co., of West Virginia; the Firestone Tire & Rubber Co., Ltd., London, England, selling companies; the Firestone Tire & Rubber Co., S.S., Ltd., Singapore, Straits Settlements, crude rubber buying and forwarding agents; and the Coventry Land & Improvement Co., Akron, owners and developers of Firestone Park adjacent to the Akron factory where over 1000 homes for employes have been constructed.

W. H. Stiles on a Trip Around the World

William H. Stiles of W. H. Stiles & Co., crude rubber importers and dealers of 1 Liberty street, New York, sailed on the steamship Empress of Russia from Vancouver March 23 for a trip around the world. On his way to Vancouver he spent several days in Akron. He will proceed direct to Singapore and tour the rubber producing districts of British Malaya and the Dutch East Indies from that point. On his way back he will visit Ceylon and London. He is expected in New York in September.

Efforts for Government Restriction of Crude Rubber Production

Restriction of crude rubber production is a topic of vital moment among the big rubber plantation companies which have their head offices in London. For considerably more than a year efforts have been made to persuade the British Government to enforce a program of restriction but so far without avail. The first answer was that the Government would not do it—that the economic situation as regards rubber should be allowed to right itself.

Last October the British Colonial office appointed a committee to study the rubber situation in the British Colonies and protectorates, and to advise as to what measures should be taken to bring about an improvement. Last November this committee submitted an interim report as a result of which discussions between the British Colonial authorities in Malaya and the Government of the Netherlands East Indies are in progress. This lends color to the belief that Government intervention may be finally secured to cover all the British and Dutch possessions in the Far East. The fact that the two governments are in touch with each other on the subject is most important.

Palmerton on Tour of Central West in Interest of Trade

P. L. Palmerton, chief of the Rubber Division of the Bureau of Foreign and Domestic Commerce, is touring the Central West in the interest of trade relations both here and abroad.

Mr. Palmerton said that the chief object of his tour was to get in personal touch with the situation in communities in the Central West, and that a closer coordination with the Bureau was expected as a result.

Pennsylvania Rubber Co. to Move New York Branch

The New York branch of the Pennsylvania Rubber Co., Jeannette, Pa., will move about May 1 to 2006 Broadway which is diagonally opposite to the present location. The new quarters are about three times more spacious and will also accommodate the export department of the company, which, however, will be maintained as a separate organization. C. G. McCullough is in charge of Vacuum Cup tire business in New York.

I. T. S. Rubber Co. Protests Import Duty on Rubber Heels

The I. T. S. Rubber Company, Elyria, Ohio, through C. J. Tower, Buffalo, import brokers, presented evidence on March 23 before the board of general customs appraisers at Buffalo against import duties imposed on shipments of a new type of rubber heel from the Canadian I. T. S. Rubber Co., Ltd., West Toronto.

Counsel for the importer pointed out that this was the first sale and shipment made by the Canadian corporation, and that the prices of the heels were based on cost of production plus 20 per cent. As production increases, the cost of each gross of heels will lower—this is the basis for the contention that the heels are not as valuable as the Government contends in its assessment for duty. The court, after hearing the evidence, allowed 10 days for each side to file briefs.

Robert Badenhop in Crude Rubber Brokerage

The Rubber Importers' & Dealers' Co., Inc., announces that it will discontinue business after consummation of its current transactions and obligations, and that the following officers are now acting for the company: President, Robert Badenhop in place of Harold W. Holcombe, resigned; LeRoy Wood, secretary and treasurer, Charles G. Taylor in place of Sloan LaMont, Jr., resigned.

Simultaneously announcement is made by Robert Badenhop that he has established himself as a broker in crude rubber, balata and gutta percha with offices at 200 Broadway. Previous to the formation of the Rubber Importers' & Dealers' Co., Mr. Badenhop had been engaged in the crude rubber brokerage business for a number of years. LeRoy Wood, who has been with him for several years, will remain as his assistant.

Meyer Rubber Co. Meets

The stockholders meeting of the Meyer Rubber Co., Columbiana, Ohio, was held March 20 and the following board of directors elected: A. W. Ellenberger of Cleveland, C. A. Walter of Dover, Ohio, Chas. S. Ling of Johnstown, Pa., E. W. Powers of Negley, Ohio, and E. C. Brumgard, F. H. Grove, F. W. Hachtel and H. W. Hammond, all of Columbiana.

The newly elected Board of Directors elected the following officers for the coming year. President H. W. Hammond, Vice pres. and General Manager F. W. Hachtel, Secretary W. L. Hooper; Treasurer, C. A. Walter; and Assistant Treasurer, W. L. Hooper. An executive committee of three members, E. C. Brungard, F. H. Grove and Chas. S. Ling, was also elected.

An effort will be made to operate the plant at an early date.

To Standardize Rubber Heels

Apropos of the desire of the Bureau of Standards to designate standardized sizes of rubber heels, a meeting to this end was held at the rooms of the Rubber Association of America at New York on Feb. 20. The subject was also thoroughly discussed at a meeting of the Rubber Heel Club of America held in Cleveland on March 4.

The Bureau of Standards wishes to have as many rubber heel manufacturers as possible present at its next meeting which will be held in New York during the latter part of this month.

January Rubber Exports Show Little Change from 1921

Although values are lower the volume of exports for January showed little change from the figures for the month of January, 1921, due to price declines. Exports of rubber goods of all kinds from the United States for the month amounted to $2,231,257, according to the Rubber Goods Division of the Department of Commerce, or approximately $105,000 less than the preceeding month and $3,249,000 less than for the month of January, 1921.

Reaching the low point in June, 1921, at $1,837,000, exports of United States rubber goods have steadily held their own at around $2,250,000. While January, 1922, figures were lower in value than those of December, it is practically certain that the actual volume of exports from these months showed little, if any, decrease over that for October and November, because of the price reductions which occurred during the latter part of 1921.

If the January rate was to continue throughout the year, the 1922 exports would amount to over $27,000,000 or about $4,000,000 less than those for 1921. However, while the early months of 1921 were characterized by relatively large exports, repeatedly declining, it is believed that the summer and autumn months of 1922 should show a substantial increase, so that it is expected the 1922 exports as a whole will equal if not exceed those of 1921, despite the considerably lower prices.

Figures for England, France, Cuba, the Dominican republic, Brazil and Japan showed an increase in the value of automobile casings shipped from this country in January, while most other markets showed a decrease over the previous month.

South Africa took nearly twice as much rubber belting in January as it did in December, while Mexico, which is one of our large rubber belting purchasers, barely held its own.

England showed an increase in rubber hose purchases in January over December while Mexico showed a considerable decrease. England, the Philippines and Mexico were our big rubber soled canvas shoe markets for the month, while Japan bought more rubber shoes than any other country.

While England's purchases of automobile casings were more than three times the value of those bought by Canada, the latter country's purchases of automobile tubes were nearly four times as great as those of England.

Cuba proved to be our largest solid tire market, with Canada, New Zealand and England following closely. Canada and England also stood out beyond all other markets in the purchase of Druggists' rubber sundries.

Casper Smith, president of the Smith Chemical & Color Co., New York, is now visiting his friends and business acquaintances in the paint and rubber industries in the territory west of Pittsburgh.

F. F. (Bill) Dugan Goes With Denman-Myers Company

F. F. (Bill) Dugan, formerly with the Goodyear Tire & Rubber Company was elected vice president and director of sales of the Denman-Myers Cord Tire Company, Warren, Ohio, at the annual meeting of the board of directors of that company.

Mr. Dugan began work with the Goodyear Tire & Rubber Company as a salesman in 1914, and was shortly promoted to manager of the Goodyear Sales School.

F. F. (Bill) Dugan

Later Mr. Dugan was promoted to the position of assistant manager of the salesmen's department, then to the managership of the merchandise distribution department, and subsequently made manager of the personnel department of the Goodyear company. Mr. Dugan's experience of more than eight years with the Goodyear Tire & Rubber Company will bring many things of value to the Denman-Myers Cord Tire Company, and means the expansion of the sales organization, and the creation of factory and dealer policies designed to benefit all concerned.

C. L. Mason, Sales Manager for the Denman-Myers Cord Tire Company will be in charge of the distributors and branches. Mr. Dugan and Mr. Mason report that the Company has made nothing less than a phenominal record on sales to date. Unit deliveries during January and February total more than all of last years' sales.

J. H. Appleby, former special representative for the Firestone Tire & Rubber Company has also come into the Denman-Myers Sales Organization, and will have charge of the field work in the State of Illinois.

J. P. Egan, formerly a special representative in the sales organization of the Goodyear Tire & Rubber Company has come into the Denman-Myers Sales Organization, and will have charge of the Field Work in the State of Ohio.

Mr. Myers reported to the board of directors that the overhead expense had been cut to the minimum, and that the Company was now operating on the lowest cost possible and still maintain the efficiency of the organization.

Mr. Denman, secretary and general manager gave a very complete and concise report of the operation of the factory, and said that the factory organization had been readjusted to secure the greatest efficiency with the least number of men possible, and that the factory was in a position to take care of all increased business until forced by necessity to build further additions to the plant.

Mr. Myers president of the company stated, that the factory would soon be running to full capacity, and that the policy of the company would continue to be conservative, as it had been in the past, even in spite of the present on-rush of new business.

The board of directors elected the following Officers for the coming year:—Walter E. Myers, president; F. F. Dugan, vice president; Walter R. Denman, secretary and general manager; John E. Morris, treasurer; L. M. Harper, assistant secretary and treasurer; C. L. Mason, sales manager.

Curt E. Wagner Developing Canadian Trade for Miller

The Miller Rubber Company, Akron, Ohio, has placed the development of its Canadian trade in the hands of Curt E. Wagner, manager of the export department, who studied conditions on a trip to Canada late last fall. Clarence Werling has visited Montreal, Quebec, Ottawa and Toronto, and George E. Meurs, manager of the New York branch of the Company is now traveling through New Brunswick, Nova Scotia and Newfoundland.

Bergougnan Announces New Tire

The Bergougnan Rubber Corporation of Trenton, N. J., announces a new moulded casing to be known as the Bergougnan "Gold Seal" tire, which is to take the place of the former Bergougan Wrapped Tread Cord.

The Bergougnan "Gold Seal"

This latest product of one of the o'dest manufacturers of tires in the industry is a departure from the tread design hitherto used, and is claimed to be one of the most perfect tires made thus far. This claim is probably open to argument but it is presented by an organization with a record of twenty-five years of solid achievement.

Besides the Trenton factory, the company operates plants in France, Belgium, Italy and Russia. New territory is now being alloted.

L. G. Fairbank, Firestone Sales Manager, Sees Prosperity Ahead

L. G. Fairbank, general sales manager of the Firestone Tire & Rubber Co., Akron, Ohio, who recently completed a survey of conditions between Akron and the Pacific coast, is quoted as follows:

"Prosperity is on the up-build. I am not predicting a boom or a return of the superficial prosperity of 1919 and early

L. G. Fairbank

1920, but I am convinced that we are on the eve of a broad, substantial increase of business that will mean more to us all because it is founded on hard work and the creation of new economic values and not the fictitious and speculative gains in the value of stocks, land or raw materials.

"Among bankers who a year ago were profoundly depressed I found a feeling that the time has come for definite and constructive advances in business on a safe and well thoughtout basis. They reported there is still much to be done in liquidation of debts, but that such large strides have already been made in this direction that they found themselves in a position to make considerable loans on projects that have sure foundation.

"Farmers are happy over the upturn in price of their products and have gained courage to plant a full acreage this year. The lumber business in the northwest is taking on new life because the volume of new building is steadily increasing.

"The increasing use of motor cars for consolidated schools, for municipal, state and government bureaus and departments, and reduction in accidents are all indications that the motor car trend is in the direction of economy and business usefulness."

The McGraw Tire & Rubber Co., East Palestine, Ohio, is now operating at about thirty per cent capacity after being closed down since Christmas, according to a statement made March 10. The company, which employs 250 men, expects to be running at normal by the middle of April.

Grand Rapids Tire & Rubber Corporation Elects

The third annual stockholders meeting of the Grand Rapids Tire & Rubber Corporation was held February 28, at the offices of the company at Grand Rapids, Michigan with about 300 stockholders present.

The board of Directors consisting of L. A. Brown, C. G. Dyer, C. S. Dickey, H. H. Swan, and M. J. Goldner, were re-elected to serve another term. The officers remain the same as heretofore.

L. A. Brown, president and general manager made his report which showed

L. A. Brown
Just Re-Elected President Grand Rapids Tire & Rubber Corporation, Grand Rapids, Mich.

the progress the company had made in distribution, and reported the company now had distributors in more than 150 jobbing centers in the United States. This list of jobbers extends from Boston, to Los Angeles. He also told the plans the company had for enlarging. C. S. Dickey, treasurer made his financial report which showed the company to be in excellent shape financially and not owing anything but current bills. He reported a comfortable surplus in the treasury.

At the conclusion of the meeting the stockholders gave the officers a vote of thanks and confidence for the manner in which the business had been carried on during the past year.

U. S. Rubber Co. Files Appeal in Rubber Heel Patent Case

The United States Rubber Company has announced that it filed on March 1 a formal appeal to the United States Circuit Court of Appeals from the decision of Judge C. Z. Luse of the United States District Court at Superior, Wis., in favor of the I. T. S. Rubber Co. of Elyria, Ohio, for alleged infringement of a rubber heel patent.

Under the decision of the U. S. District Court, the United States Rubber Company will refrain entirely from the manufacture of the type of heel involved in the litigation, pending final adjudication. Only one type of heel is under scrutiny in the suit and this type has constituted only a small part of the company's rubber heel business. In the meantime the company will continue its large volume of manufacture of heels that do not involve the type of construction at issue in the patent case.

Carpenter Tire & Rubber Co. Starts Production

The Carpenter Tire & Rubber Co., Inc., has started production in their new factory at Hempstead, Long Island. This company has been organized several years as distributors, and reports having done a very good business in that time. They are now confining their business to the exclusive manufacture of solid motor truck tires.

Harry B. Carpenter, president and general manager, is the founder of the business and very well-known to the trade. He started with Mack Bros. Motor Car Co., builders of the original Mack Truck. He was one of the pioneer motor truck salesmen of the country. Realizing the possibilities in the truck tire field, he joined the truck tire department of the Republic Rubber Company, where his knowledge and experience in the truck field was of value to him and his employers in experimenting and finally developing a satisfactory truck tire for them. Going into business for himself as a distributor was simply a step toward the manufacture of his own make of tires.

Associated with him as general superintendent, is Harry Davenport, who started with Morgan & Wright in 1896, advancing to the responsiblity of superintendent of the vehicle tire department. He joined the Pennsylvania Rubber Co. and was in charge of their solid tire production when they undertook the manufacture of Polack Tyres for the original German Polack company. He was responsible for putting into operation the instructions received from the experts sent here by the German company to make tires in accordance with the original ideas of the designer. During the war he was called abroad for truck tire work, gaining valuable experience in the best of Italian ond French tire manufacturing. More recently Mr. Davenport was with the Fisk Rubber Company.

The company is now specializing in the manufacture of Carpenter HI-Crowns—a high profile type. At standard list they are maintaining their guarantee of 10,000 miles.

John W. Buckley

John W. Buckley, aged 72, president of the J. W. Buckley Rubber Company, 69 Warren street, New York, died at his home in Brooklyn on March 3. He began business in 1872 and in 1910 the company which bears his name was incorporated.

F. E. Titus, Chairman Foreign Trade Division

F. E. Titus, who was elected chairman of the Foreign Trade Division of the Rubber Association of America in January, is director of sales of the International B. F. Goodrich Co., of Akron, Ohio. He has been a Goodrich man for 15 years past having managed the branches at Denver, Pittsburgh and Buffalo, and in 1917 he came to the New York office to handle the foreign sales department. A year ago he was called to the main office at Akron and soon after was appointed director of sales of the International Goodrich. Popular with all

F. E. Titus
Chairman Foreign Trade Division of the Rubber Association of America

his associates his election as head of the Foreign Trade Division of the Rubber Association is regarded as recognition of real merit and will doubtless mean much in the development of this important Division work.

Galion Co. to be Dissolved

The plant of the Galion Rubber Co., Galion, Ohio, which was destroyed by fire during the latter part of November, will not be rebuilt by the company, which will dissolve. The company has completed a deal with the newly organized Equality Rubber Company, Ashland, Ohio, whereby all of the salvaged machinery and equipment will be installed in the new plant.

Much of this machinery was not damaged by the fire and can be used without repair. The sale includes all the Galion property with the exception of the boiler, boiler room and mixing room, which had been built on leased ground adjacent to the old building.

The offices and stock rooms of the Dominion Asbestos & Rubber Corporation are now located at 1780 Broadway, New York.

Addition to the Whitehead Plant at Trenton

A two-story brick addition to the plant of the Whitehead Bros. Rubber Co., of Trenton, N. J., is just about completed. It is 60 x 40 ft. in ground dimensions and will be equipped with machinery for the manufacture of cotton-lined rubber hose.

The old stone mill of the Whitehead plant is not only the oldest rubber mill in Trenton, but is one of the oldest plants in New Jersey used for industrial purposes. After a century of service it appears to be in as good condition today as ever—an interesting commentary on the mill construction of preceding generations.

Samuel Cadwallader is general manager of the plant where general lines of mechanical rubber goods are manufactured.

Rubber Club of San Francisco Holds Dinner-Meeting

The Rubber Club of San Francisco recently held a dinner-meeting at Tait's Café to promote acquaintanceship between manufacturers' representatives and tire dealers. Guests at the function were the directors and officers of the San Francisco Tire Merchants' Association.

J. B. Brady, president of the Rubber Club and San Francisco manager for the United States Rubber Co., presided and introduced as speakers: G. J. Brooks, president of the San Francisco Tire Merchants' Association and associated with the firm of Brooks & Scales; and M. H. Crowe, sales manager of the Tansy-Crowe Co., distributors of Pennsylvania tires.

About 140 members and friends of the San Francisco Tire Merchants' Association held a dinner at the St. Francis Hotel on the following Saturday. G. J. Brooks, president, introduced as one of the chief speakers ex-Senator N. J. Whelan, chairman of the board of directors of the Coast Tire & Rubber Co., who spoke on "The Relation of the Manufacturer to the Dealer." R. Daniel, San Francisco branch manager of the Goodyear Tire & Rubber Co., also spoke.

Personal

C. L. Brickman is now chief chemist at the Braender Rubber & Tire Co. plant at Rutherford, N. J.

* * *

A. W. Carpenter of the rubber heel department of the Goodyear Tire & Rubber Co., Akron, Ohio, has recently gone to the Holdtite Mfg. Co. of Baltimore, Md. as factory manager.

* * *

O. G. Saxon, the crude rubber department of Arnold Dorr & Co., 93 Front street, New York, returned March 28 from a three months trip though the rubber producing sections of Brazil.

* * *

Horace B. Tobin, vice president and general manager of the Woven Steel Hose Co., Trenton, N. J. has been elected president of the Board of Directors of the Mercer Hospital, Trenton.

* * *

Arthur T. Hopkins, who has been located for several years past at the L. Candee boot and shoe plant of the United States Rubber Co., at New Haven, Conn., in charge of the development of the department of industrial relations, resigned on Jan. 1 last.

* * *

John E. Throop served as chairman of the Committee on Automobiles which took care of the transportation of visitors at the Third District Conference of the international organization of Rotary Clubs at Trenton March 30 and 31. The third district comprises clubs from northern New Jersey and Eastern New York.

* * *

M. P. Tucker, a former employe of the Firestone Tire & Rubber Co., has been appointed superintendent of the Akron waterworks. He will have active charge of both the operating and construction divisions of the waterworks department when the consolidation of the divisions is effected. Mr. Tucker was born on a farm near Clarksville, Ohio, on Sept. 4, 1879, and was graduated from the University of Cincinnati in 1896 with a degree of B.S., C.E.

* * *

Frank Berenstein, president of the Panther Rubber Mfg. Co., Stoughton, Mass., was in attendance at the convention of the Southeastern Leather and Shoe Findings' Credit Bureau held at Macon, Ga., during the latter part of March. He was accompanied by M. S. Klein, special advertising representative for the company, and George Rush, special representative for the southern territory.

* * *

W. A. Johnson, president of the Rubber Products Co., Barberton, Ohio, addressed the Kenmore Chamber of Commerce March 14 on the subject "Kenmore: Past, Present and Future." Mr. Johnson, who besides being a rubber manufacturer, is an extensive real estate operator and an author of note, has been closely identified with the laying out and development of Kenmore, which lies between Akron and Barberton.

The Association of New York Rubber Brokers

The name selected for the crude rubber brokers' organization is the Association of New York Rubber Brokers. The officers elected (as already reported in the Jan. 25 issue of the RUBBER AGE, page 291) were: President, R. L. Chipman, 25 Beaver street; vice president, Harold W. French of French & Handy, Inc., 347 Madison Avenue; secretary, C. A. Morse of Morse & Winans, 68 Nassau street, and treasurer, A. C. Spencer-Hess, 299 Broadway.

The governing committee consists of the above-named officers together with Russell W. Earle of Earle Brothers, 66 Broad street; George E. Pell of Pell & Dumont, Inc., 9 Hanover st., and M. Rothschild of 25 Beaver st.

Goodrich Branch Men Convene

The southern branch men of the B. F. Goodrich Co., Akron, Ohio, met in Atlanta, Ga., on March 18 for a conference with W. O. Rutherford, vice president and director of sales, who is making a tour of his territory throughout the country, visiting the larger branches. About two hundred branch men attended the conference.

Studebaker-Wulff Rubber Co. to Increase Production

Demand for the product of the Studebaker-Wulff Rubber Co., Marion, Ohio, will necessitate an increase in production, as soon as possible, according to B. F. Wulff, general manager. Even with the contemplated increase to 100 tires and 100 tubes, it is said by officials of the company, that there are sufficient orders on hand to keep the plant running for the next two months.

In doubling its capacity the Studebaker-Wulff company will also double its working force. "It is not unreasonable to believe," said Mr. Wulff, that before the summer is over, we shall be employing in the neighborhood of 250 men."

The plant of the company, which is shown below on this page, is of reinforced concrete construction throughout. There are three stories and a basement available for manufacturing space. The capacity of the plant is 500 tires and 500 tubes a day.

THE PLANT OF THE STUDEBAKER-WULFF RUBBER CO., MARION, OHIO

MARKETS

Cottons and Fabrics

NEW YORK, APRIL 3, 1922

The ginning report of the Census Bureau fixing the cotton crop of 1921-1922 at 7,976,665 bales considered in connection with an estimated planting of about 27,000,000 acres has created some anxiety respecting the new crop. With a disposition on the part of the planters to reduce acreage and the alarming reports of the government experts on the boll weevil pest—not to speak of the unfavorable financial condition—users of cotton are concerned as to how America is going to produce the 12,000,000 or 13,000,000 bales that will be required next winter when the rehabilitation of the world will have been well under way.

In the same report the average gross weight of 1921 bales was 498.5 pounds as compared with 506.4 pounds for 1920 bales. American-Egyptian bales totalled 37,094 as compared with 92,561; Sea Island 3,316 as compared with 1,868. Cotton remaining to be ginned was 7,435 bales as compared with 211,893 last year.

The following were the opening, high low and closing prices of cotton as of April 1 on the New York Cotton Exchange.

	Open.	High.	Low.	Close.
May	17.98	18.08	17.89	17.92
July	17.40	17.48	17.28	17.31
Oct.	17.06	17.11	16.93	16.94@16.95
Dec.	16.98	17.00	16.87	16.87
Jan.	16.89	16.90	16.76	16.76

EXTRA STAPLE COTTON

There was a decided slump in the extra staple cotton market during the last week with business abnormally dull. Owing to the further spread of the strike in New England there was little demand from these mills and only supplies for immediate need were being ordered from other mill sections. Quotations for extra staple cotton, strict middling in grade and color, were as follows: 1⅛ inch, 26 to 28 cents; 1 3/16 inch, 29 to 30½ cents; 1¼ inch, 32½ to 34 cents; 1 5/16 inch, 35 to 37 cents.

EGYPTIAN COTTON

The demand for Egyptians, according to late reports from Alexandria, continues about the same with very little new business and no indications of any very heavy volume in the near future. Uncertainty as to the provisions of the new tariff bill makes spinners hesitate to commit themselves to new purchases and the fluctuations in Sterling exchange has been largely responsible for the price irregularities.

During the month of February there were 51,500,000 pounds of Egyptian cotton exported while arrivals of ginned cotton at Alexandria for the period amounted to 57,420,000 pounds. Arrivals of cotton from the interior totalled 52,240,000 pounds while stocks of cotton on hand at the end of the month amounted to 248,542,000 pounds.

PIMA COTTON

It is estimated that 85,000 acres of cotton will be planted in Arizona this year. The new crop will be handled at much lower cost than last year and at a correspondingly greater net profit. The gross returns last year were in excess of $5,000,000. The market for Pima cotton during the period was dull in keeping with the other cotton markets. These quotations were heard: No. 1, 35 cents; No. 2, 33 cents; No. 3, 31 cents.

Goodyear's Textile Mills Co. Reports Profit

The Goodyear Textile Mills Co., of Los Angeles, Calif., a subsidiary of the Goodyear Tire & Rubber Co. of Akron, in its annual statement to stockholders shows a net profit, for the first 14 months of operation, of $270,826. The mills started operating on July 1, 1920, and up to June 1, 1921, operated at 25 per cent of capacity then increased to 50 per cent and since early last fall have been running at capacity. The report shows current assets $818,694 and current liabilities $114,048 with surplus account at $188,540.

Slacer "Duck Branding Act" Not Reported

There is general satisfaction over the successful efforts of the National Duck Association and the Association of Cotton Textile Merchants in opposition to the bill introduced in the Assembly of the New York State Legislature providing for a change in the present standards of duck. The bill was not reported from the committee when the legislature adjourned. The proposed legislation which was opposed by tire manufacturers, provided for a new and unnecessary standard on many kinds of duck which would have caused misunderstanding and confusion without any protection to the consumer.

TIRE FABRICS

Now that we have entered the spring season manufacturers of tire fabric look for better business; not only the full extent of the seasonal increase but more. Since the early weeks of the year there has been very little actual buying and it is expected that buying on a better scale must necessarily follow to meet the increased production by the tire manufacturers during the next three months. With good weather conditions during the spring months the demand for tires will increase with a consequent buying of fabric. Some factors express the belief that the call will not come until May but the general opinion prevails that a good demand for fabric will follow the first few weeks of good motoring weather.

The following prices were heard in the trade and while there is a possibility of shading prices on certain fabrics they give a fair idea of the figures generally quoted:

SQUARE WOVEN				
17¼-ounce Egyptian uppers, combed	lb.	.67½	@	.70
17¼-ounce Egyptian uppers, carded	lb.	.60	@	.65
17¼-ounce Sakellarides, combed,	lb.	.80	@	.85
17¼-ounce Sakellarides, carded,	lb.	.70	@	.75
17¼-ounce Peeler, combed,	lb.	.60	@	—
17¼-ounce Peeler, carded	lb.	.45	@	.50
CORD FABRICS				
Combed Sakellarides	lb.	.85	@	—
Carded Sakellarides	lb.	.75	@	.80
Combed Peeler	lb.	.65	@	—
Carded Peeler	lb.	.51	@	.55
Combed Egyptian uppers	lb.	.70	@	—
Carded Egyptian uppers	lb.	.65	@	.70

SHEETINGS—DUCKS—BURLAPS

Sheetings—The market for sheetings continued quiet. For 40 inch, 3.60 yard, 9¾ cents was asked; 40 inch, 3.75 yard, brought 9 cents; 40 inch, 4.25 yard, 7¾ cents and 40 inch, 3.15 yard, 12 cents.

Ducks—Very little business was transacted and prices remain unchanged. Enameling duck was quoted, 30 at 34 cents; single filling, 13½ at 16½ cents, card basis, prices varying according to the grade; double filling, 16 at 17½ cents, card basis; enameling, 30 at 34 cents, depending on width and make.

Burlaps—There has been a steady upward swing to the market and trading has been more active the last two weeks than for some time. The demand was particularly strong for heavies but the lights also shared in the advance. There is a general feeling that the present price levels will maintain for the spring months.

SHEETINGS						
40-inch	2.50-yard	yd.	.12¼	@	—
40-inch	2.85-yard	yd.	.10¾	@	—
40-inch	3.15-yard	yd.	.12	@	—
40-inch	3.60-yard	yd.	.09¾	@	.10¼
40-inch	3.75-yard	yd.	.08¾	@	—
40-inch	4.25-yard	yd.	.07¾	@	—
DUCKS						
Belting		lb.	.31	@	—
Hose		lb.	.31	@	—
Enameling		lb.	.30	@	.34
Shoe Ducks		lb.	.40	@	—
Single filling		lb.	.13½	@	.16½
Double filling		lb.	.16	@	.17½
BURLAPS (Carload Lots)						
7 -ounce	40-inch	yd.	4.25	@	—
7½-ounce	40-inch		4.30	@	—
7½-ounce	45-inch		5.00	@	—
10 -ounce	40-inch		6.40	@	—
10 -ounce	45-inch		7.50	@	—
8 -ounce	45-inch		5.15	@	—
10 -ounce	45-inch		6.25	@	—
10½-ounce	40-inch		6.40	@	—
DRILLS						
37-inch	3.25-yard	yd.	.09¾	@	—
37-inch	2.75-yard	yd.	.10½	@	—
37-inch	3.00-yard	yd.	.10¼	@	.10½
37-inch	3.50-yard	yd.	.09⅜	@	—
37-inch	3.95-yard	yd.	.08¼	@	—
OSNABURGS						
30-inch	7-ounce		.08	@	.09
40-inch	7-ounce		.10½	@	.10¾

Chemicals and Compounding Ingredients

THE GENERAL MARKET—NEW YORK, APRIL 3, 1922—Selling pressure was entirely removed from the market during the last period. It was noticeable that inquiries were for larger amounts, that they embraced a wider range of products and that there was a general feeling that the long, weary, downward trend was over with. Prices were well maintained at levels much higher than that which prevailed a short time ago; yet prices on the whole are about 33 1/3 per cent lower than they were a year ago and many items are still close to pre-war prices. With all the real difficult problems that confronted dealers in 1921 cleared away the outlook is much better. Business must necessarily improve—in fact improvement is already here.

ACCELERATORS

Organic

Aldehyde

ammonia, crystals	lb.	$ .90 @	.95
Aniline oil, bulk basis,	lb.	.16 @	.18
Excellerex,	lb.	.55 @	—
Formaldehyde-Aniline	lb.	.45 @	.50
Hexamethylene-tetramine (powdered)	lb.	.72½ @	.75½
Paraphenylenetramine	lb.	1.60 @	1.75
Thiocarbanilid	lb.	.35 @	.60
Vulcocene	lb.	.35 @	—

Inorganic

Lead, dry red bbls.	lb.	.08 @	.08¼
Lead, sublimed white	lb.	.06½ @	—
white, basic carbonate	lb.	.06½ @	.07¼
Litharge, domestic	lb.	.08½ @	—
imported	lb.	.17 @	—
Lime, Superfine	lb.	.02 @	.02½
Magnesium, calcined, extra light	lb.	.45 @	—
heavy	lb.	.05½ @	—
Magnesite, powdered	ton	50.00 @	65.00

COLORS

Blacks			
Carbon Black	lb.	.10½ @	.20
Micronex	lb.	.12 @	.17
Lamp black	lb.	.17 @	.45
Bone "	lb.	.05½ @	.07½
Drop "	lb.	.07½ @	.16
Ivory "	lb.	.15 @	.45
Blues			
Prussian	lb.	.50 @	.55
Ultramarine	lb.	.10 @	.35
Cobalt	lb.	.23 @	.30
Browns			
Iron oxide	lb.	.04 @	.05
Sienna, Italian, raw and powdered	lb.	.05½ @	.14
Umber, Turkey, raw and powdered	lb.	.04¼ @	—
Greens			
Chrome, light, c. p.	lb.	.30 @	.32
medium	lb.	.35 @	.36
dark	lb.	.36 @	.45
commercial	lb.	.12 @	—
Reds			
Antimony, crimson	lb.	.35 @	.36
golden	lb.	.21 @	.27
red	lb.	.20 @	.22
Indian, English, pure	lb.	.12 @	.15
Para toner	100 lb.	1.40 @	—
Rubber makers red	lb.	3.50 @	—
purple	lb.	2.50 @	—
Toluidine tone	lb.	2.50 @	—
Tuscan	lb.	.17½ @	.44
Venetian	lb.	.03½ @	.06½
Vermillion, quicksilver, English	lb.	.85 @	.90
domestic	lb.	.25 @	.30
Whites			
Albalith	lb.	.06 @	.06½
Aluminum bronze	lb.	.55 @	.60
Azolith	lb.	.06 @	.06½
Lithopone, domestic (factory)	lb.	.06¼ @	—
Zinc oxide, American Horse Head Special	lb.	.08 @	.08½
XX red	lb.	.07½ @	.08
American Azo: ZZZ (lead free)	lb.	.07½ @	.08
ZZ (under 5 per cent leaded)	lb.	.07¼ @	.07¾
Z (8-10 per cent leaded)		.07 @	.07½
Zinc oxide, French process, White seal	lb.	.11 @	.11¼
Green seal	lb.	.09¾ @	.10¼
Red seal	lb.	.08¾ @	.09¼
Yellows			
Cadmium sulphide	lb.	1.50 @	1.75
Chrome, light, c. p.	lb.	.16½ @	.17
dark	lb.	.16½ @	.17
medium	lb.	.16½ @	.17
Ocher, French	lb.	.03 @	.04½
domestic	lb.	.02 @	.02½
Rubber Maker's Yellow	lb.	3.50 @	—

COMPOUNDING INGREDIENTS

Aluminium flake	ton	25.00 @	29.50
hydrate	ton	20.00 @	22.00
Ammonium carbonate, lump	lb.	.10¼ @	.11¼
Barium dust	ton	100.00 @	—
Barytes, southern off-color,	ton	15.00 @	17.00
Western, prime white,	ton	23.00 @	—
Basofor	lb.	.04½ @	—
Beta-naphtol,	lb.	.29 @	—
Blanc fixe, dry, f.o.b. works	lb.	.04¼ @	—
Chalk, precipitated, extra light	lb.	.03½ @	.04¼
heavy	lb.	.02½ @	.03¼
Clay, China, domestic,	ton	7.50 @	9.00
imported	ton	16.00 @	21.00
Dixie	ton	22.00 @	32.00
Blue Ridge	ton	20.00 @	32.00
Fuller's Earth, powdered	ton	22.00 @	25.00
Fossil flour	ton	60.00 @	..
Glues, extra white	lb.	.30 @	.40
medium white	lb.	.22 @	.26
cabinet	lb.	.18 @	.30
cabinet low grade	lb.	.15 @	.18
common bone	lb.	.08½ @	.14
Graphite flake, bbls.	lb.	.05 @	—
powdered	lb.	.04 @	.10
Infusorial earth, powdered	ton	60.00 @	—
bolted	ton	65.00 @	—
Mica, powdered	lb.	.15 @	—
Rotten Stone (powdered)	lb.	.02½ @	.04½
Silica (aluminum)	ton	22.00 @	25.00
Soapstone, powdered	ton	.15 @	.20
Starch, powdered corn	cwt.	2.32 @	2.42
Talc, domestic	ton	18.00 @	20.00
French	ton	22.50 @	30.00
French, high grade	ton	40.00 @	45.00
Italian,	ton	44.00 @	55.00
Terra Alba, American No. 1	cwt.	1.85 @	2.00
American No. 2	cwt.	1.25 @	..
Tripoli	lb.	.02½ @	—
Whiting, commercial	cwt.	1.15 @	—
Quaker	ton	13.00 @	15.00
English cliffstone	cwt.	1.75 @	2.00
glider's bolted	cwt.	1.20 @	1.35
Paris whiteAmerican	cwt.	1.25 @	1.35
Zinc Oxide— 5 per cent leaded		.07¼ @	.07¾
10 per cent lead sulphate	lb.	.07 @	.07½
20 per cent lead sulphate	lb.	.07 @	.07½
35 per cent lead sulphate	lb.	.07 @	.07½

(Also see whites)

MINERAL RUBBER

Gilsonite	ton	70.00 @	—
Genasco (factory)	ton	50.00 @	—
Hard hydrocarbon	ton	33.00 @	45.00
Soft hydrocarbon	ton	30.00 @	35.00
Pioneer M.R.	ton	42.00 @	44.00
320 M. P. hydrocarbon (c. l. factory)	ton	47.50 @	50.00
300/310 M. P. hydrocarbon (c. l. factory)	ton	42.50 @	45.00
Synpro, granulated, M.R. (factory)	ton	59.50 @	64.50

SOFTENERS

Acids			
Acetic, 28 per cent	cwt.	2.50 @	3.00
Carbolic (phenol)	lb.	.11½ @	.16
Cresylic, 97 p.c.	lb.	.50 @	.55
95 p.c.	lb.	.45 @	.50
Muriatic, 20 degrees	cwt.	1.25 @	1.50
Nitric, 36 dgrees	cwt.	5.00 @	6.00
Sulphuric, 66 degrees	ton	16.00 @	17.00
60 degrees, bulk	ton	10.00 @	11.00
Tartaric, crystals	lb.	.30 @	—
Alkalies			
Caustic soda, 60 p.c.	cwt.	2.50 @	2.60
Soda ash, 48 p.c.	cwt.	1.27½ @	1.47½
Oils			
Castor, No. 3, bbls.	lb.	.10½ @	—
Corn, crude, bbls.	lb.	.11½ @	—
refined	lb.	.13 @	—
Chinawood, bbls.	lb.	.14¼ @	.14½
Cottonseed,	lb.	.10 @	—
Glycerine, c.p. drums	lb.	.16½ @	.17
Linseed, domestic	lb.	.79 @	—
imported		.73 @	—
Palm, Niger	lb.	.06¼ @	.06½
Lagos	lb.	.08¼ @	.08½
Peanut, domestic, crude	lb.	.11½ @	.12
Pine, steam distilled over 930° sp. gr.	gal.	1.00 @	—
Rapeseed, refined	gal.	.84 @	.86
blown	gal.	.92 @	.95
Rosin, first rectified	gal.	.37 @	—
second rectified	gal.	.39 @	—
Tar, commercial	gal.	.31½ @	—
Soya Bean, crude, bbls.	lb.	.10¾ @	.11
" " refined	lb.	.11 @	.11½
Resins and Pitches			
Cumar resin, hard	lb.	.09 @	.12
Cumar resin, soft	lb.	.09 @	.12
Tar, retort	bbl.	9.00 @	—
kiln burned	bbl.	10.00 @	—
Pitch, Burgundy	lb.	.05 @	.06
coal tar	ton	01½ @	—
pine tar		.03½ @	—
Rosin, grade K	bbl.	5.40 @	—
Strained	bbl.	6.00 @	—
Shellac, fine orange	lb.	.80 @	—
Solvents			
Acetone, drums,	lb.	.08 @	.11
Alcohol, denatured, No. 1	gal.	.38 @	.39
Methyl, 95 per cent, drums	gal.	.54 @	.56
Ethyl, 190 proof, bbls.	gal.	4.70 @	4.80
Benzol, 90 per cent	gal.	.27 @	.32
pure	gal.	.32 @	.34
Carbon bisulphide,	lb.	.06 @	.07
tetrachloride	lb.	.09½ @	.11½
Dimethylaniline	lb.	.38 @	.45
Motor gasoline, steel bbls.	gal.	.27 @	—
Toluol, pure	gal.	.30 @	.35
Turpentine, spirits	gal.	.87 @	—
wood	gal.	.78 @	.80
Xylol, pure	gal.	.45 @	.51
commercial	gal.	.31 @	.38
Waxes			
Beeswax white, pure	lb.	.36 @	.38
Carannba	lb.	.12 @	.16
Ceresin, white	lb.	.09 @	.10
Bayberry	lb.	.21 @	.22
Montan, crude	lb.	.04½ @	.05
Ozokerite, hard, pure,	lb.	.22 @	.23
Paraffin	lb.	.25 @	—
Petrolatum, amber, bbls.	lb.	.04½ @	—
dark amber,	lb.	.04 @	—

SUBSTITUTES

Black	lb.	.07 @	.14
White	lb.	.08 @	.16
Brown	lb.	.10 @	.14
Brown factice	lb.	.08 @	.15
White factice	lb.	.09 @	.16

VULCANIZING INGREDIENTS

Lead, black hyposulphite (black hypo)	lb.	.35 @	.42
Orange mineral, domestic	lb.	.11 @	.13
Sulphur chloride (jugs)	lb.	.05 @	.06
Sulphur flour	cwt.	1.45 @	2.10
Bergenport (c.l.)	cwt.	2.55 @	—
superfine, 99½ p.c.	cwt.	2.40 @	2.90

Zinc Oxide—Both domestic and imported stocks have been moving in good volume. Consumption by the tire industry has been along liberal lines and the volume is in excess of last year at this time. With this firmness in the market the question of a reduction in price is out of the question. The imports of zinc oxide have been too small to have any effect on the market. Producers continue to quote: Horse Head Special, 8 at 8½ cents; XX red, 7½ at 8 cents; Azo ZZZ 7½ at 8 cents; ZZ, 7¼ at 7¾ cents; Z, 7 at 7½ cents.

Caustic Soda—There has been persistent buying of this material, due in a measure to the impending coal strike. Producers quoted, basis 60 per cent, in carlots, $2.50 to $2.60 per 100 pounds. Export demand has been quite active.

Lithopone—The feature of this market has been the demand from the rubber manufacturers. Material continues to come from Germany and Belgium but is much inferior to the domestic product. There seems to be sufficient demand to absorb every pound that can be produced. Domestic is quoted at 6¼ cents a pound for carload lots of bags.

Crude Rubber

NEW YORK, APRIL 3, 1922

The crude rubber market continues in the same stagnation that has been its chief characteristic since last December. Prices have remained practically where they were at the time of our report of March 11 with slight fluctuations of ¼ cent or ½ cent.

The demand from manufacturers continues to be negligible, and is the cause of much discussion among the traders. The shrewdest observers believe that manufacturers have had larger stocks all the time than was generally supposed and that no sudden and unusual demand may be expected from them for a year to come at least.

A writer in *Commerce & Finance* makes the prediction that an advance in prices must come and that it will be "surprisingly sharp and sudden." He says:

"It is not unlikely that the recent history of cotton, wool and coffee will be re-enacted in the crude rubber market. Like all those commodities the end of the boom found a huge over-supply pressing on a market from which most of the demand was suddenly withdrawn, and prices dropped steadily until the 12 cent level was reached. Since that time there has been some recovery, but the market has declined again and last week spot ribbed sheets were quoted in New York at 14½ cents. This is admittedly far below the cost of production and such a condition can last in rubber no longer than it could in cotton, wool or coffee. While demand is as restricted as at present it would be foolhardy to predict when the price will right itself, but that it eventually will is as certain as anything mortal can be.

"No one knows what a normal price for rubber is, for the plantation industry has never faced a normal condition. Until the plantations came into full bearing there was an abnormal under supply; ever since there has been an abnormal under demand. But as long as the use of automobiles increases and chemists find new wonders which they can make out of rubber the consumption is bound to grow, and the disastrous losses of the producers are sure to curb any inclination they may have to expand production unduly, even though no organized scheme for restriction is put into effect. Therefore, we unhesitatingly predict an advance which when it comes may be surprisingly sharp and sudden.

"The Rubber Growers' Association of Malaya has adopted a resolution deprecating the increase of tree-tapping areas unless additional labor can be recruited, declaring that otherwise there must be an increase of wages that will increase production costs. Dreadful thing, this increase of wages to an economic level!

"Tire production will be increased after April 1 and a price advance is among the possibilities. Reports from the rubber centers are more optimistic."

Whether the parallel drawn between cotton, wool and coffee and crude rubber will be justified by the event may well be regarded as a moot question. It is certainly easier to restrict the production of the other commodities mentioned than that of crude rubber which involves the up-keep of such enormous plantations of rubber trees.

If the British and Dutch Governments could arrive at an agreement regarding a program of restriction it would undoubtedly be welcomed by all branches of the business as highly beneficial. While such action appears to be regarded in England as quite likely to come about, it seems less likely at this distance that the British Government will concern itself with such an economic question except as a matter of last resort.

It is reported that the decreased revenues due to the poor business in rubber and tin is placing the Governments of the Straits Settlements and the Federated Malay States in a critical position.

London stocks of crude rubber were reported as 66,848 tons on March 15 as compared with 61,994 tons a year ago.

Quotations on the various grades of crude rubber in the New York market this date are as follows:

Plantations			
Ribbed Smoked Sheets spot	.14¾	@	.15
May/June	.15	@	.15¼
July/Sept.	.16	@	.16¼
July/December	.16½	@	.16⅝
October/December	.17	@	.17¼
Smoked sheets plain, spot	.13¼	@	.13½
First Latex Pale Crepe, spot	.14¾	@	.15
May/June	.15	@	.15¼
July/Sept.	.16	@	.16¼
July/Dec.	.16½	@	.16¾
October/December	.17	@	.17¼
Amber Crepe No. 1	.14¼	@	.14¼
" " " 2	.13½	@	.13⅝
" " " 3	.13	@	.13¼
Grand Central Crepe	.13¼	@	.13½
Light clean thin brown, Crepe	.13¼	@	.13½
Clean Thin Brown Crepe	.12¾	@	.13
Commercially Clean thin brown crepe	.12½	@	.12¾
Specky Brown Crepe	.12	@	.12¼
Roll Brown Crepe spot	.12	@	.12¼
May/June	.12¼	@	.12¾
Paras			
Madeira Fine	.20	@	.20¼
Acre Fine	.18	@	.18¼
Up-river Fine	.18	@	.18½
Up-river Medium	.17	@	.17½
Up-river Caucho ball	.13½	@	.13¾
Up-river Coarse	.13	@	.13¼
Islands Fine	.17¼	@	.17½
Islands, Medium	.15½	@	nom.
Islands Coarse	.08½	@	.08¾
Cameta	.09½	@	.10
Xingu Ball	.11¼	@	.11½
Tapajos fine, spot	.17¼	@	.17½
Pontianac			
Prime Pressed	.13	@	.13¼
Plantation	—	@	.07½
Bangermassin	.08	@	.08¼
Palembang	.10	@	.10¼
Siak Gutta Percha	.17¼	@	.17½
Prime Macassar	2.75	@	2.85
Balata			
Panama Block	.30	@	.40
Surinam Sheets	.65	@	.67
Columbia Block	.42	@	.43
Venezuela Block	.51	@	.53

Reclaimed Rubber

NEW YORK, APRIL 3, 1922

Since our last report the market for reclaimed rubber has shown no great improvement. Although, some sizable weights of reclaims are being used by the sole and heel branch of the greater industry, which is growing in magnitude and importance every day, the inactivity of crude rubber still continues to exert its depressing influence on reclaims.

Quotations remain practically unchanged and are nominally as follows:

Standard Reclaims			
Floating	$.12	@	$.13
Friction	.12	@	.13
Boots and Shoes	.09	@	.10
Boots and Shoes (washed)	.13	@	.14
Mechanical	.08	@	.10
Hose	.10½	@	.11½
Tires, truck	.08	@	.09
Tires, auto	.09	@	.10
White	.13	@	.14

Scrap Rubber

NEW YORK, APRIL 3, 1922

The market for scrap rubber has shown little change during the last fortnight. Clean truck tires is practically the only grade that has been active; this grade has been so priced ($5 to $10 a ton) that the smaller dealers have not been able to accumulate sufficient stocks, and stocks owned by larger dealers are comparatively low.

Manufacturers and reclaimers, anticipating the large accumulation of boots and shoes due to the close of the winter months, are buying only their immediate requirements. Few large orders are reported.

Quotations of this date are nominally as follows:

Auto tire peelings	.01⅛	@	.01¼
Standard White auto	.01	@	.01⅛
Mixed auto	.00½	@	.006/10
Bicycle tires	.00½	@	.00⅝
Clean solid truck tires	.00¾	@	.00⅞
Boots and shoes	.02½	@	.02⅝
Arctics, trimmed	.00¾	@	.02
Arctics, untrimmed	.01	@	—
Inner tubes, No. 1	.03¼	@	.03½
Inner tubes, compounded	.02½	@	.02⅝
Battery jars, black compounded	Nominal		
Battery jars No. 1 bright fracture	Nominal		
Inner tubes, red	.02½	@	.02⅝
Heels and pads	Nominal		
Black mixed	.00¼	@	.00⅜
Garden hose	.00½	@	.00⅝
Air brake hose	.00⅛	@	.00¾
Red packing	.01	@	.01¼
Red mixed rubber	.01¾	@	.02
White mixed rubber	.01¾	@	.02

Trade Marks Applied For

[The following are trade-mark applications pertinent to our field pending in the United States Patent Office which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade-Mark Company, Barrister Building, Washington, D. C. or Bush Building, 130 West 42 Street, New York, trade-mark specialists. As an additional service feature to its readers this Journal gladly offers to them an advance search free of charge on any mark they may contemplate adopting or registering.]

TIGER—No. 158, 888. William T. Palmer & Company, Inc., New York, N. Y. For elastic.

"V" within a black rim circle—No. 152,662. Victory Rubber Company, Seattle, Wash. For heels, soles, composed entirely or partly of rubber.

EVERDRY in rectangular frame—No. 145,695. Nathan Levin, Pittsburgh, Pa. For Bathing caps, elastic bands for personal wear, gloves of waterproof material, aprons, raincoats.

UNITED with words "SHOE STORES CO" arranged perpendicularly in the center of word within a diamond—No. 139,553. United Shoe Stores Company, Haverhill, Mass. For boots and shoes of leather, rubber and fabric.

SHOETERIA in black script and words "SHOE CO." in white letters on black below—No. 145,972. Shoeteria Shoe Company, Salt Lake City, Utah. For rubbers and overshoes of rubber.

REDDAWAY—No. 151,663. F. Reddaway and Co., Limited, Manchester, Eng. For hose made of india rubber.

PERFECTION—No. 155,251. Boston Woven Hose & Rubber Company, Cambridge, Mass. For fibrous or rubber belting.

UNIVERSAL in black letters upon red background representing a heart—No. 135,181. Universal Battery Company, Chicago, Ill. For hard rubber jars, hard rubber covers.

ROGERS in black letters within outline oval—No. 148,217. Detroit White Lead Works, Detroit, Mich. For rubber compositions for coating and cementing roofs.

LOSANT within a double line diamond—No. 146,067. The Cincinnati Rubber Mfg. Co. Norwood, Ohio. For rubber hose, belting and packing.

PICTURE of a gloved hand holding a spoon through a rubber tire—No. 138,822. The Miller Rubber Company, Akron, Ohio. For bathing caps, wearing apparel belts, and rubber household gloves.

WARSHOTTO BOOT on outer rim of circle with "S. D." within square frame upon a diamond with letters ES and EE—No. 139,871. For boots and shoes of a combination of leather, rubber and fabric.

EVE REDY TUBE PATCH above small figure of an athlete on a black oval with white rays extending to rectangular frame—No. 157,054. Frank H. Binninger, Cleveland, Ohio. For hot-water bottles, raincoats, overshoes, tennis slippers, rubber boots, garden hose, and rubber bulbs.

HALL—No. 156,776. The Columbia Tire & Rubber Company, Mansfield, Ohio. For Inner tubes for pneumatic tires, cord tires, and fabric tires.

LETO in black upright letters within a black circle—No. 156,541. The Norwalk Tire and Rubber Company, Inc., Norwalk, Conn. For elastic rubber tires.

WINGO'S above portrait of two daughters of applicant and words "EVER-STICK PATCHING"—No. 155,727. Joel S. Wingo, Spartanburg, S. C. For Patches for inner tubes.

ANTI-PUNCTURE across picture of three tires with punctures—No. 155,814. Albert E. Gaylord, New York, N. Y. For tire-sealing compound.

NASCO—No. 155,067. National Auto Supply Co., Allentown and Quakertown, Pa. For cotton-fabric automobile tires with rubber tread, automobile tire tubes, and fabric patches for repairing the same.

SEAL PACK THE END OF TIRE TROUBLE—No. 154,499. Angus Grant, Edmonton, Alberta, Canada. For puncture-healing composition for pneumatic tires.

EVE REDY TUBE PATCH above small figure of an athlete on a black oval with white rays extending to rectangular frame—No. 157,054. Frank H. Binninger, Cleveland, Ohio. For sheet rubber patches for tire tubes.

MERODE—No. 146,471. Winship, Boit & Co., Wakefield, Mass. and New York, N. Y. For gloves of combination of fabric and rubber, shoes.

New Incorporations

NEW YORK

Multi-Fabric Corporation, to manufacture and sell waterproof cloth etc. $500,000. Incorporators: E. N. Goodwin, 43 Exchange Place, New York City.

The Hurner Corporation, to make automobile tires. $300,000. Incorporators: W. H. Gardner, H. W. Bank and E. W. Burr. Attorney, J. M. Gardner, 141 Broadway.

Tubeless Pneumatic Tire Corporation. $250,000. Incorporators: W. K. Ross, A. S. Roberts and H. A. Dinger. Attorney, D. Phelps, 2 Rector street, New York City.

The Fred Erwin Co., to deal in tires and tubes. $5000. Attorney, M. M. Simon, 305 Broadway, New York City.

The Bedford Tire Co., to manufacture and sell tires. $5000. Incorporators: C. S. Tubin, E. Katzka and F. Klein. Attorney, M. London, 55 Liberty street.

DELAWARE

The Hubbell Rubber Company, to manufacture tires. $600,000. Principal office, Wilmington, Delaware. Agent: Corporation Service Company, Wilmington, Delaware.

International Rubber Co. of America, to manufacture tires. $20,000,000. Principal office, Wilmington, Delaware. Agent: Corporation Service Co., Wilmington, Delaware.

Utility Rubber Co., to manufacture tires $1,000,000. Incorporators: Guy E. Norwood, New York; F. Haskell Smith, Bloomfield, New Jersey; James H. Coghill, Morristown, New Jersey. Agent, United States Corporation Company.

Conservative Tire Co. $10,000. Incorporators: Thomas McKenna, G. S. Hanson, T. J. Melvin. Principal office, Bradford, Pennsylvania. Agent, Corporation Service Company. C. Kenyon Co. of California, to manufacture tires and tubes. $25,000. Incorporators: Russell Goldman, A. G. Thanan, Harry G. Leise, of New York. Agent, Registrar and Transfer Company.

Fidelity Rubber Company, to manufacture rubber goods. $250,000. Incorporators: E. E. Allison and C. R. Allison of New York; A. K. Dohrmann, Jersey City, New Jersey. Agent, Capital Trust Co. of Delaware.

Puncture Proof Tire and Accessories Co. of Johnstown, Pa., to manufacture and sell tires, tubes etc. $300,000. Principal office, Wilmington, Delaware.

OHIO

The Gordon Rubber Co., to manufacture rubber goods. $10,000. Incorporators: M. E. Taggart, R. E. Erb, James K. Lynch, C. J. Keplinger and T. L. Shepard. Principal office, Canton, Ohio.

F. G. Litsch, to manufacture tires. $175,000. Principal office, Mt. Vernon, Knox County, Ohio.

The Para—Sells Tire & Rubber Co. $500. Incorporators: C. A. Henne, Willard Parker, M. A. McManus, J. B. Kistner and J. P. Harkin.

Queen City Rubber Co., to manufacture and deal in rubber goods. $10,000. C. F. Davis Jr., president: L. D. Davis, vice president; C. F. Davis, J. Surtees, secretary.

T. C. Waldron Tire Co., to manufacture tires, etc. $3000. Incorporators: L. C. Smith, J. A. Bunn, D. N. Gude. Principal office, Columbus, Ohio.

NEW JERSEY

The Princeton Tire & Rubber Company, to deal in rubber tires and tubes. $10,000. Incorporators: L. B. Goodman, Russell Suozzo and Peter M. Dorsey. Attorney, I. Irving Davidson.

MISSOURI

The Popular Bluff Tire Co., to manufacture tires. $100,000. Principal office, Popular Bluff, Missouri.

Perfect Tire Co., to manufacture and deal in tires, tubes etc. $5000. Incorporators: A. M. Bruce, T. L. Coogan, W. D. Cockran. Principal office, St. Louis, Missouri.

MASSACHUSETTS

The Pioneer Rubber Co., to manufacture and deal in rubber goods. $10,000. Everett G. Matthews, North Brookfield, president; Louis L. Merritt, treasurer and A. J. McManus, director—54 Commercial street, Worcester, Massachusetts.

Name Changes

The World Tire and Rubber Co. Inc., to the World Tire and Rubber Co. Inc., of New Jersey.

Tinsley Economy Tire Co., New York City to Keystone Tire Sales Co., No. 11.

Langan and Phillips to Illinois Rubber Co., Chicago, Illinois.

Trade Marks Continued

INVULNER—No. 155,884. J. Houdry & Fils, Paris, France. For a preparation for repairing pneumatic tires, serving to close instantly and automatically during running puncture leading to collapse of the air tubes.

SONCO—No. 141,911. J. Meyers Stationery & Printing Co. Inc., New York, N. Y. For rubber or rubber composition erasers.

PRESTO—No. 158,381. Cupples Company Manufacturers, St. Louis, Mo. For rubber jar rings.

AUTOQUIP—No. 143,528. Autoquip Mfg. Co. Inc., Rochester, N. Y. For tire pumps and valve grinders.

TREX—No. 147,755. The Trexler Company, Philadelphia, Pa. For automobile accesssories —namely, tire carriers.

American Rubber Patents

1,410,359—Celestin Berne, Bridgeport, Conn. Resilient Tire For Vehicle Wheels.

1,409,995—Percy B. Bosworth, Springfield, Ohio. Core For Pneumatic Tires and Method of Constructing Same.

1,410,023—Lee R. McGuire, Akron, Ohio. Expansible Bag for Vulcanizing Tires.

1,410,309—Ernest Hopkinson, New York, N. Y., and Hector V. Lough, Hartford, Conn. said Lough assignor of his entire right to the Hartford Rubber Works Company, a Corporation of Connecticut. Apparatus for Building Pneumatic Tires for Automobiles.

1,408,678—Hiram D. Ayres, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N. Y. Method of Vulcanizing Rubber Articles.

1,408,714—Clarence S. Preston, San Diego, Calif. Vehicle Tire.

1,409,021—Darrell E. Patton, Fort Worth, Tex., assignor to Claude H. Parker, North Little Rock, Ark. Puncture-proof Tire.

1,408,644—Francis X. Schuler, Fort Worth, Tex. Inner Lining and Reenforcement for Pneumatic Tires.

1,409,095—Lemon Greenwald, Akron, Ohio, assignor to The Firestone Tire and Rubber Company, Akron, Ohio. Vulcanizing Apparatus.

1,409,154—Theron Davis, New York, New York. Method of Making Perforated Blown Rubber Articles.

1,409,692—Henry M. Follweiler, Hazelton, Pa. Rubber Heel.

1,409,275—Edward O. Benjamin, Newark, N. J. Rubber Products and Method of Making the same.

1,409,263—John B. Wallace, Mukwonago, Wis. Tire.

1,409,151—Charles J. Carlson, Helena, Mont. Tire.

1,409,762—Doyle Patchin and George Patchin, Shawnee, Okla. Pneumatic Puncture proof Single Tube Tire.

1,409,382—Peter S. Kotarski, Edwardsville, Pa. Puncture proof Pneumatic Tire.

1,409,795—Hiram J. Stewart, Canton, Okla. Resilient Tire.

THE RUBBER AGE BUYERS GUIDE

ACCELERATORS
Harshaw, Fuller & Goodwin Co., The, Cleveland, O.
Rubber Service Laboratories Co., The, Akron, O.
States Metals Co., Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago.

ACCUMULATORS
Adamson Machine Co Akron, O.
Akron Rubber Mold & Machine Co., Akron, O.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Machine Co., Ansonia, Conn.
Wellman - Seaver - Morgan Co., Cleveland, Ohio.

ACIDS
Harshaw, Fuller & Goodwin Co., Cleveland, O.
National Aniline & Chemical Co., Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago.

ACID TANKS
Birmingham Iron Foundry, Derby, Conn.
Devine, J. P., Co., Buffalo, N. Y.
Farrel Foundry & Machine Co., Ansonia, Conn.

AIR & STEAM METAL BAGS
Allsteel Ridewell Tire & Rubber Co., Dayton, Ohio.

AIR BRAKE HOSE
United States Rubber Co., New York.

AIR GOODS
Davol Rubber Co., Providence, R. I.
Hodgman Rubber Co., Tuckahoe, N. Y.
United States Rubber Co., New York.

AIR MATTRESSES
Davol Rubber Co., Providence, R. I.
Hodgman Rubber Co., Tuckahoe, N. Y.
United States Rubber Co., New York.

AIRPLANE AND BALLOON CLOTHS
United States Rubber Co., New York.
Hodgman Rubber Co., Tuckahoe, N. Y.

ALBA WHITING
Daigger, A., & Co., Chicago, Ill.
Harshaw, Fuller & Goodwin Co., Cleveland, O.
Industrial Chemical Co., New York.
Wishnick-Tumpeer Chemical Co., Chicago.

ALCOHOL
Harshaw, Fuller & Goodwin Co., Cleveland, O.
Tyler Patterson Co., Clev'd, O.
Wishnick-Tumpeer Chemical Co., Chicago.

ALUMINUM FILLER
Wishnick-Tumpeer Chemical Co., Chicago.

ALUMINUM FLAKE
Aluminum Flake Co., Akron, Ohio.
Butcher, L. H., Co., New York.
Fulper, Edward B., Trenton, N. J.
Harshaw, Fuller & Goodwin Co., Cleveland, O.
Rubber Service Laboratories Co., The, Akron, O.

AMMONIA AQUA
Laidlow, Kelly & Co., New York.
Tyler Patterson Co., Clev'd, O.
Wishnick-Tumpeer Chemical Co., Chicago.

ANGLE THERMOMETERS
Taylor Instrument Companies, Rochester, N. Y.

ANILINE OIL
Butcher, L. H., Co., New York.
Daigger, A., & Co., Chicago, Ill.
Fulper, Edward B., Trenton, N. J.
Klipstein, A., & Co., New York.
National Aniline & Chemical Co., Inc., New York.
Tyler Patterson Co., Clev'd, O.
Wishnick-Tumpeer Chemical Co., Chicago.

ANILINE OIL PLANTS
Devine, J. P., Co., Buffalo, N. Y.

ANTIMONY, SULPHURETS
Butcher, L. H., Co., New York.
Daigger, A., & Co., Chicago, Ill.
Fulper, Edward B., Trenton, N. J.
Harshaw, Fuller & Goodwin Co., Cleveland, O.
States Metals Co., Inc., New York.
Rare Metal Products Co., Belleville, N. J.
Tyler Patterson Co., Clev'd, O.
Typke & King, Mitcham, England.
Wishnick-Tumpeer Chemical Co., Chicago.

APRONS—RUBBER
Hodgman Rubber Co., Tuckahoe, N. Y.
Miller Rubber Co., Akron, Ohio.

ARTIFICIAL RUBBER
Carter Bell Mfg. Co., New York.
Stamford Rubber Supply Co., Stamford, Conn.

ASBESTINE
Butcher, L. H., Co., New York.
Daigger, A., & Co., Chicago, Ill.
Fulper, Edward B., Trenton, N. J.
Harshaw, Fuller & Goodwin Co., Cleveland, O.
Tyler Patterson Co., Clev'd, O.
Wishnick-Tumpeer Chemical Co., Chicago.

ATOMIZERS
The Rubber Products Co., Barberton, Ohio.

AUTOCLAVES
Devine, J. P., Co., Buffalo, N. Y.

AUTOMOBILE COATS
Hodgman Rubber Co., Tuckahoe, N. Y.
United States Rubber Co., New York.

AUTO TOP FABRICS
Hodgman Rubber Co., Tuckahoe, N. Y.
Taylor, Armitage & Eagles, Inc., New York.
Turner Co., J. Spencer, New York.
United States Rubber Co., New York.

BALATA
Wood, Charles E., New York

BALATA FILM (Colorless)
Peters Bros. Rubber Co., N. Y.

BALLOON FABRICS
United States Rubber Co., New York.

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